THE EFFECT OF TAX STRUCTURE VARIABLES ON THE DECISION FRAME ADOPTED AND THE TAX REPORTING CHOICE: TAXABLE INCOME COMPONENTS AND TAX PAYMENT TIMING

By

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Abstract of Dissertation Presented to the Graduate School
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THE EFFECT OF TAX STRUCTURE VARIABLES ON THE DECISION FRAME ADOPTED AND THE TAX REPORTING CHOICE: TAXABLE INCOME COMPONENTS AND TAX PAYMENT TIMING

By

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The size of the federal deficit and the resulting budgetary problems of the Internal Revenue Service have prompted tax administrators to consider nontraditional means to increase voluntary tax collections. The purpose of this study was to examine whether two fundamental aspects of the tax structure, the type of taxable income component (whether the item is income or an expense) and tax payment timing, affect taxpayers' tax reporting decisions.

Based on the concepts of integration and segregation from mental accounting, hypotheses were developed that predicted that the tax structure variables would affect the decision frame adopted by individuals when faced with a tax reporting decision where the proper tax treatment is uncertain. The decision frame, in turn, was predicted to affect the tax reporting choice in a manner consistent with prospect theory. In addition to the indirect effect on the tax reporting choice via the decision frame, the type of taxable income component and tax payment timing were predicted to affect the tax reporting choice directly.

To test these hypotheses, an experiment was conducted. Student subjects participated in a business simulation where the true purpose of the study was disguised. The study was conducted over a four-week period to expose subjects to real time differences in tax payment timing. Subjects earned lottery tickets based on their decisions; the tickets were entered into a drawing and cash prizes were awarded.

The results for the effects of tax structure variables on the decision frame weakly supported the predictions. The expected effect of the decision frame on the preference for aggressive behavior was also weakly supported. The strongest result was for the direct effect that the type of taxable income component had on the tax reporting choice; more aggressive behavior was preferred for expense items even after controlling for differences in uncertainty about the proper tax treatment. Other variables that were consistently associated with the tax reporting choice were the individual's subjective audit rate and risk attitude. The results suggest that efforts to broaden the tax base through reductions in allowable expenses may have unanticipated compliance effects.

CHAPTER 1
INTRODUCTION AND BACKGROUND

Introduction

Research examining tax reporting behavior of individual taxpayers includes the effects of a diverse set of variables (see Jackson and Milliron (1986) for a review).[1] These variables are often classified as either economic or psychological variables. Examples of economic variables are the taxpayer's income or wealth, the tax rate, the penalty rate for underpayment of tax, and the probability of audit. Psychological variables examined include perceptions of the fairness of the tax laws, perceptions of the complexity in the tax laws, a general disposition toward honesty, feelings of competitiveness, guilt feelings, and knowledge of peers' compliance.

This same set of explanatory variables also could be categorized based on another dimension. Most of these variables can be classified as either (1) elements of the tax structure or (2) unique characteristics of the taxpayer. The tax structure can be defined as (1) the set of policies and rules that govern the computation of taxable income and the tax liability; (2) the reporting method used to communicate information about taxable income to the government; (3) the mechanism used to transfer payments between the taxpayers and the government; and (4) the policies used by the government to encourage voluntary compliance. Examples of tax structure elements are the tax rate, penalty rate, probability of audit, perceptions of the fairness in the tax laws, and perceptions of the complexity in the tax laws.[2] Taxpayer characteristics related to tax reporting behavior include the taxpayer's income or wealth, a general disposition toward honesty, feelings of competitiveness, guilt feelings, knowledge of peers' compliance, and demographic variables.

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[1] The tax reporting behavior studied by researchers has varied from the intentional understatement of taxable income, referred to as noncompliance, to the adoption of an aggressive position (i.e., a reporting position that reduces taxable income) for an income or expense item where the proper tax treatment was uncertain. The proper tax treatment of an item of taxable income could be uncertain due to ambiguity in the law, ambiguity in the facts, or incomplete documentation.

While the relationship between taxpayer characteristics and tax reporting choices is important, the ability to control or monitor many of these variables is beyond the reach of governmental regulation. Many of the personal characteristics studied by researchers are not observable to the IRS. For example, the IRS cannot discriminate between taxpayers that vary in their disposition toward honesty when tax returns are chosen for audit. While researchers may gain insight into tax reporting behavior taken as a whole, knowledge about the effects of unobservable variables provides little aid to tax administrators. In addition, administering the tax system in a way that takes advantage of observable taxpayer characteristics to increase the tax collected might be viewed as discriminatory. For example, if research demonstrates that women have a higher level of compliance because they fear authority more than men do, IRS policies that target women to take advantage of this trait would certainly produce objections from the American public.

Features of the tax structure, however, are established by tax policymakers. Research that focuses on the effect of variables that are under the control of the government has the potential to provide valuable insights that could be used in formulating tax policy.

Traditionally, the Internal Revenue Service (IRS) has relied on the tax structure policies specifically designed to encourage (or coerce) taxpayer compliance to achieve an acceptable level of voluntary compliance. Compliance measures include the risk of audit, penalties assessed on underpaid taxes, and third-party reporting of transactions to the government. As the "tax gap" continues to increase, the effectiveness of these policies has been questioned. In fact, the IRS estimates that only 31% of individual noncompliance "could be recovered through all IRS enforcement programs combined" (Roth et al. 1989, 31).

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[2] Although the tax structure elements may be perceived by individual taxpayers differently, all taxpayers face the same tax structure.

In addition to having limited effectiveness, some compliance measures are also costly to implement. Budget constraints in the IRS reduced the overall audit rate in 1988 to less than 1% (IRS, 1990). IRS budgetary restrictions appear especially ironic since policymakers during the last decade have identified uncollected taxes as an acceptable way to reduce the federal deficit (Scholz 1989, 14-16); estimates of the 1986 tax gap are $70 billion, approximately 40% of the federal deficit (IRS, 1988).

Given these limitations and the budgetary problems experienced recently by the IRS, tax policymakers are faced with identifying alternative means of affecting taxpayer behavior. Recently, the focus has been on measures that encourage voluntary compliance rather than those that punish noncompliance.[3] In a study on the use of tax system features to increase compliance, Milliron and Toy concluded that "the general policy implication appears to be that the compliance solution may require structural adjustments to the tax law" (1987, 97). Rather than increase the role of enforcement mechanisms, the researchers suggest a change in tax structure variables that are not expressly intended to influence taxpayer reporting behavior.

Purpose of the Research

The purpose of this research is to examine the effect of two fundamental features of the tax structure on the tax reporting decision process: taxable income components (income or expense items)[4] and tax payment timing.[5] The function of these fundamental tax structure variables is not expressly related to altering taxpayer reporting behavior; nevertheless, a relationship may exist.

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[3] One example of this was the theme of the 1990 IRS Research Conference: "How Do We Affect Taxpayer Behavior? The Case for Positive Incentives, Assistance or Enforcement."

The tax reporting choice model presented in this study includes a direct effect of the tax structure variables on the tax reporting choice. In addition, an indirect effect of the variables on the tax reporting choice as mediated by the taxpayer's decision frame is predicted. The concept of a decision frame is central to the predictions of prospect theory, a descriptive model of how choices are made under uncertainty (Kahneman and Tversky 1979).

This study poses three specific research questions: (1) Are tax reporting choices different depending on the taxable income component and the tax payment timing? (2) Are decision frames affected by taxable income components and tax payment timing? and (3) Are tax reporting choices related to decision frames? The first question deals with the direct effect of the tax structure variables on tax reporting choices. The remaining two questions together deal with the indirect effect of tax structure variables on tax reporting choices as mediated by the individual's decision frame.

Motivation for the Research

The motivation for the present research derives from two primary sources related to the direct and indirect effects of the tax structure variables discussed above. First, others have suggested that the tax structure can directly affect taxpayers' attitudes and behavior (Lewis 1982; Hansen 1983; Milliron and Toy 1987; Bird 1988; Steuerle 1989; Moon 1990). Recently, in a comprehensive report that summarized the current body of taxpayer reporting behavior literature, the Panel on Taxpayer Compliance Research[6] included two fundamental aspects of the tax structure in their recommendation of topics warranting future research (Roth et al. 1989). They stated that "compliance depends on the structure of tax return items" (1989, 26) and suggested that future models of taxpayer compliance should consider differences in income and expenses (1989, 87). In addition, the Panel advised that future compliance models should "address how compliance is affected by the timing of income receipts and tax payments" (1989, 7).

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[4] For purposes of this study, the distinction of an item being either an income or expense item will be referred to as taxable income components. When computing an individual taxpayer's actual taxable income, personal exemptions and standard deductions, which do not fall into the categories of income and expenses, are also considered.

[5] For purposes of this study, the tax payment is made simultaneously with the filing of the tax return with the government; the tax payment and tax filing terms will be used interchangeably. In actual tax filings, tax payments may be made earlier or later than the date that the return is filed.

Second, prior tax researchers have previously studied the indirect effect that the withholding provisions of the tax structure have on tax reporting decisions (Clotfelter 1983; Hite et al. 1988; Robben et al. 1988; Schadewald 1989; Dusenbury 1990; Chang and Schultz 1990; Schepanski and Kelsey 1990). These studies investigated the relationship between tax reporting behavior and the settlement amount at filing: that is, whether a payment is due by the taxpayer or a refund is returned to the taxpayer. Most of these payment/refund studies predicted a relationship between the payment/refund status of the taxpayer's return and the tax reporting decision based on the assumption that tax payments and refunds affect the taxpayer's perception of the tax reporting decision, or decision frame.

According to prospect theory, gain and loss decision frames result in different preferences for risky choices. The effect of the decision frame on tax reporting decisions was tested by attempting to manipulate the subjects' frames through the experimental materials. Refunds were assumed to produce gain frames while payments were expected to result in loss frames. Because no attempt was made to elicit the frames adopted from the subjects, tests of differences in tax reporting choices between subjects receiving refunds and subjects receiving payments were tests of the joint hypothesis that (1) tax refunds and payments induced the intended frames and (2) the frames influenced the choices as predicted by prospect theory. The results of these payment/refund studies are inconclusive. When the predicted results were not found, the possibility that the intended frame was not adopted cannot be distinguished from the explanation that the frame did not affect the choice.

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[6] The Panel was created by the National Academy of Sciences at the request of the IRS Research Division.

The present research extends prior tax reporting research in two ways. First, the present research examines whether tax reporting choices are different depending on the taxable income component and the tax payment timing (the direct effect). Second, predictions are developed for the decision frame based on the tax structure variables. The predicted effect of the tax structure variables on the decision frame is tested separately from prospect theory's predictions of the effect of the decision frame on the tax reporting choice (the indirect effect).

Overview of Research Method

The effects of taxable income components and tax payment timing on decision frames and tax reporting choices were examined in an experimental study. The tax reporting choice examined was the preference for aggressive reporting of an item where the proper tax treatment was uncertain. To disguise the true purpose of the study, the tax reporting choices were made in the context of a business simulation. The study was conducted over a four-week period to expose student subjects to real differences in tax payment timing. Subjects made tax reporting choices for an income or an expense item that differed only in sign (either receipt or payment). Subjects' decision frames (gains or losses) were measured as well as preferences for aggressive tax reporting. Subjects earned lottery tickets based on decisions made in the study. The tickets were entered into a lottery with eleven cash prizes.

Organization of Remaining Chapters

Chapter 2 discusses prior research relevant to the research questions. Models of both the decision frame and tax reporting choice are presented in Chapter 3 along with the research hypotheses. Because the concerns of the present study include not only the tax reporting choice but also the decision frame, the effect of tax structure variables on these two aspects of decision making will be modelled separately. Chapter 4 describes the research design used to test the hypotheses. The results of the experiment are described in Chapter 5. A summary of the study and conclusions are presented in Chapter 6.

CHAPTER 2
REVIEW OF RELEVANT RESEARCH

Introduction

The discussion in this chapter derives from three primary sources: (1) literature related to the effects that the tax structure has on taxpayer attitudes and behavior; (2) research related to the direct effects of taxable income components and tax payment timing on tax reporting behavior and attitudes; and (3) research related to the indirect effect of tax structure variables on tax reporting decisions. In the present study, the indirect effect is characterized by the decision frame. The discussion of the decision frame literature includes reviews of both the research specifically related to tax reporting decisions and the theory of mental accounting from decision-making research.

The Effect of the Tax Structure on Taxpayer Attitudes and Behavior

A model of tax evasion suggested by Lewis (1982, 156) demonstrates the primary effects that the tax structure can have on tax compliance. In this model, the entire tax structure affects both the government's choice of enforcement policies and the taxpayers' adoption of taxpaying attitudes. These variables, in turn, directly affect the level of tax compliance. The Lewis model suggests that aspects of the tax structure other than those intended to affect compliance behavior can ultimately affect the level of tax compliance.

The effects that the tax structure can have on taxpayers' decisions and attitudes have been demonstrated by examining reactions to changes in the tax structure that have taken place over time. Tax policy historians note the passive acceptance of substantially increased Social Security taxes by the American public due to the introduction of the withholding mechanism (Hansen 1983, 110; Bird 1988, 25-26).[1] More recently, it has been suggested that the extreme public objections that led to the repeal of the Medicare Catastrophic Coverage Act (U.S. Congress 1988) in 1989 stemmed, in part, from the fact that the payments would be made in a lump-sum with the tax filing (Steuerle 1989). This revolt occurred despite policymakers' efforts to present the amount as a premium rather than a tax (Moon 1990).[2]

The effect that the tax structure can have on a single taxpaying attitude, such as the perceived fairness of the tax laws, is vividly demonstrated in an example in Schelling (1981). The perceived fairness of a reduction in taxes for dependent children varied depending on whether the tax structure allowed an exemption for having children or whether the tax structure assessed a "premium" on childless taxpayers.

The Direct Effect of Tax Structure Variables on Tax Reporting

Taxable Income Components

A basic feature of the tax structure is the set of rules that governs the computation of taxable income. Taxable income represents an accumulation of both income and expense amounts. Recently, the Panel on

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[1] The ability to disguise the tax assessment through collection devices like withholding and tax payments made at the point-of-purchase is often referred to as "fiscal illusion" (Hansen 1983, 39).

[2] Even changes in tax law that are intended to be revenue neutral but alter the relative magnitudes of the tax base and the tax rate may affect taxpayers. Anecdotal evidence from discussions with CPAs suggests a behavioral response to the lower rates and broadened base of the Tax Reform Act of 1986. CPAs reported they were "pushed to the limit" by clients who objected to the loss or limitation of long-standing deductions. This reaction suggests a sensitivity on the part of the taxpayer to the definition of taxable income components apart from the bottom line tax liability. A study on taxpayer perceptions of fairness by Gerbing (1988) also supports this belief. The percentage of taxpayers who perceived the reduction in deductions as less fair than the existing level (55%) was higher than the percentage of taxpayers who viewed the new tax rates as less fair than the existing tax rates (42%).

Taxpayer Compliance Research concluded that reporting income and expenses are separate components of an "accurate reporting of tax liability" (Roth et al. 1989, 20). In their conceptual framework for understanding taxpayer behavior, Smith and Kinsey (1987) also recognized that the decision processes for reporting income and deductions may not be the same. Smith and Kinsey make a clear distinction between taxable income components that seems obvious when they state that "the acts of filing, reporting income, and claiming deductions are different" (1987, 643). This distinction, however, has received little explicit consideration in tax reporting research. From Smith and Kinsey's perspective, the bottom line of a tax return is not the result of a comprehensive decision to comply or not to comply but the sum of the individual effects of many separate "tax-related" decisions.

Research related to differences in tax reporting attitudes or decisions for different taxable income components can generally be classified as one of three types: (1) IRS estimates of noncompliance; (2) research that has assumed that economic or psychological variables affect reporting decisions for income and expense items equally; and (3) research into specific attributes of the tax system (e.g., complexity).

IRS estimates

IRS estimates of actual noncompliance from the deliberate understatement of taxable income indicate that the dollar amount of unreported income far exceeds the amount of overstated deductions (Roth et al. 1989, 43-45). The 1981 individual income tax gap due to unreported income was estimated to be $52.2 billion while the uncollected tax due to overstated business expenses and personal deductions was estimated to be $12.9 billion.

Although IRS estimates provide evidence that reporting behavior differs between taxable income components, causal explanations are difficult. Such estimates are based on archival data bases that are fraught with confounding variables. For example, the classification of an item as income or expense may serve as a proxy for the opportunity for noncompliance. An opportunity differential results because certain conditions must exist for expenses to reduce taxable income (e.g., itemized deductions must exceed the standard deduction). Greater opportunity to underreport income exists because all taxpayers have the opportunity to understate income but not all taxpayers can overstate deductions.[3]

Another difference in opportunity exists because income received that is not subject to third-party reporting is completely "invisible" to the IRS.[4] Expenses other than mortgage interest are not affected by third-party reporting. However, the act of claiming an expense makes the expense completely "visible" to the IRS. A taxpayer understating income, then, can make income invisible to the IRS while a taxpayer overstating expenses must make the expense visible in order to reduce the tax liability.

Observed differences in reporting behavior for taxable income components may merely reflect the opportunity differential. For taxpayers who report business or rental income on their tax returns, however, opportunity is relatively equal across taxable income components. These taxpayers are generally allowed to deduct business-related expenses and also receive income that is not subject to third-party reporting. Possibly because of this, the pattern of voluntary compliance levels[5] between income and expense items appears to reverse for those reporting business or rental income.

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[3] Data from the 1979 TCMP file reported in Roth et al. (1989, 50-51) provide some idea of how the need to meet certain conditions can alter the relative importance of noncompliance for income and expense items. For example, when all persons filing tax returns are considered, only 17.5% understate taxable income by overstating itemized deductions. However, 61% overstate itemized deductions when only the noncompliance of taxpayers able to itemize their deductions is considered.

[4] The high level of voluntary compliance for wages and salaries (99.9%) is explained by the existence of third-party reporting (Roth et al. 1989, 60). Also, third-party reporting appears to be highly related to tax reporting in experimental studies as well (Madeo et al. 1987).

Kagan (1989, 84) reports that the 1981 estimated voluntary compliance levels for net income (i.e., income after expenses have been deducted) are well below the average compliance level of 87.2% for both Schedule C business income (50.3%), and rental income (37.2%). The portion of gross income that is voluntarily reported is much higher for Schedule C business income (78.7%) and for rental income (95.6%). For taxpayers with business and rental income, voluntary reporting of expense items appears lower than the average for income items.

In a survey commissioned by the IRS, taxpayers' perceptions of how "people cheat" did not support the belief that the majority of unpaid tax is due to underreporting income. Respondents judged the incidence of cheating by underreporting income as approximately equal to cheating by overstating deductions (Yankelovich et al. 1984, 30).[6]

The effect of economic and psychological variables

For the most part, economic and psychological variables have been assumed to equally influence reporting decisions for all taxable income components (see Jackson and Milliron 1986 for a comprehensive review of these variables). Often, the focus of tax reporting behavior research is on the bottom line tax liability that is being reported without recognition of the fact that this amount is the accumulation of many separate "tax-related" decisions (Smith and Kinsey 1987).

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[5] Voluntary compliance is measured by the IRS from data collected by the Taxpayer Compliance Measurement Program (TCMP). For individual taxpayers, the voluntary compliance level is computed by dividing the total tax liability reported by the taxpayer by the total tax liability determined by the IRS audit examination.

[6] When taxpayers were asked to agree or disagree with common rationales for cheating on taxes, the second most agreed with statement was one "suggesting that taxpayers should 'risk' taking a deduction they are not sure about" (Yankelovich et al. 1984, 36). Upon hearing this finding, one CPA suggested that taxpayers view claiming unsupported deductions like "padding their expense accounts." Anecdotal evidence also provides a sense that taxpayers feel differently about income and expense items. When asked if clients exhibit different reporting behavior between income and expense items, the response of a former Big 6 tax partner was a resounding "Hell, yes."

Economic variables include the taxpayer's income or wealth, the tax rate, the penalty rate for underpayment of tax, and the probability of audit. In economic models, the tax reporting decision is generally modelled as a choice under uncertainty with expected utility maximization as the operant decision paradigm (Allingham and Sandmo 1972). The tax reporting decision is modelled as purely economic; personality traits like honesty or a sense of ethics are not relevant in such models. The taxpayer chooses the amount of taxable income to report that will result in the after-tax wealth with the highest utility. Analytical models do not recognize that taxable income is comprised of many separate line items on the tax return; differences in income and expense items are not acknowledged.

Psychological variables include perceptions of the fairness of the tax laws, perceptions of the complexity in the tax laws, a general disposition toward honesty, feelings of competitiveness, guilt feelings, and knowledge of peers' compliance.[7] In addition, levels of the psychological variables are often related to differences in demographic data like gender and age. While the goal of purely economic models is to explain tax reporting behavior, models based on psychological variables may seek to explain either behavior or attitudes toward tax reporting.

Tax researchers using experimental methods to study the effects of economic and psychological variables have generally included tax reporting decisions for both income and expense items in their hypothetical cases (e.g., Kaplan et al. 1986; Schadewald 1989; Sanders and Wyndelts 1989; Dusenbury 1990) or for income items only (e.g., Jackson and Jones 1985; Kaplan and Reckers 1985; Hite 1988). Those including both income and expense items do not provide explicit hypotheses as to why the variables in question might affect taxable income components differently. In addition, the levels of the specific variables examined are not always held constant across income and expense cases.[8] Researchers including only income cases are apparently assuming that the effect of the variables tested would be similar when the reporting scenarios included expense items.

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[7] Models that include psychological variables often include economic variables as well.

Differences in tax system attributes

Research that explicitly examines attributes of the tax structure has revealed several differences between income and expense items other than the opportunity for tax avoidance. Studies of the effects of fairness (Yankelovich et al. 1984; Milliron 1985), complexity (Yankelovich et al. 1984; Milliron 1985; Long and Swingen 1987), and ambiguity (Klepper and Nagin 1987) suggest that taxpayers' perceptions of these attributes are not constant across all taxable income components.

The relationship between the associated degree of complexity and taxable income components has been even more broadly represented by researchers who view the number of deductions allowed as a surrogate for the degree of complexity in a tax system (Milliron and Toy 1988, 86; Slemrod 1989).[9] The relationship between complexity and tax reporting has been hypothesized to be mediated through taxpayers' uncertainty about the correct amount of taxable income to report.[10]

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[8] For example, in a payment/refund study (Dusenbury 1990), differences in the type of taxable income component (income or expense) were coupled with differences in the sign of the settlement (payment or refund). In the refund case, subjects chose the amount of an income item to report. In the payment case, subjects chose the amount of an expense item to deduct.

[9] The number of deductions allowed is measured with respect to the tax laws in general, not with respect to the deductions allowed to a specific taxpayer.

[10] However, the effect that increased uncertainty has on taxpayer compliance is unclear (Alm 1988; Beck and Jung 1989).

Tax Payment Timing

The relationship between the timing of a transaction and the timing of the tax payment depends on both (1) the type of transaction and (2) when the transaction occurs. Taxpayers who derive their income from salaries and wages generally pay their taxes through withholding as the income is earned. Taxpayers who are self-employed or have income from passive sources are required to make estimated tax payments. Since estimated tax payments are made quarterly, the tax may be due two or three months after the income is received. The timing of the reduction of taxes for expenses also depends on the type of expense.

Second, this relationship is affected by the imposition of an annual tax return filing. If a taxpayer receives income not subject to either withholding or estimated tax payments on December 31, 1991, the tax on the income is due on April 15, 1992, approximately three and one-half months later. However, if a taxpayer receives the income one day later, on January 1, 1992, the tax is due on April 15, 1993, approximately fifteen and one-half months later. The taxpayer receives a one-year tax deferral in exchange for a one-day delay in receiving the income. While it is well-known that the presence of the deferral potential affects taxpayers' preferences for timing the receipt of income, it is not known whether the delay in tax payment affects the amount of income that the taxpayer ultimately reports.

If the time value of money is ignored, expected utility theory would predict no differences in tax reporting behavior depending on tax payment timing.[11] Recently, the Panel on Taxpayer Compliance Research suggested that future models of compliance should "address how compliance is affected by the timing of income receipts and tax payments" (Roth et al. 1989, 7).

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[11] If the time value of money is considered, expected utility theory would suggest that no taxpayer would overpay taxes through withholding since interest is lost on the overpaid taxes that will be refunded sometime after the tax filing occurs.

No tax reporting research efforts have explicitly considered the influence that tax payment timing has on reporting decisions. However, recent studies (Clotfelter 1983; Chang and Schultz 1990; Robben et al. 1988; Hite et al. 1988; Schadewald 1989; Schepanski and Kelsey 1990; Dusenbury 1990) positing a relationship between the taxpayer's "bottom line" at tax filing time (payment due or refund due) and the tax reporting decision are related to the issue of tax payment timing.[12] Although the results of these studies are not conclusive, taxpayers with payments due have been found to be more aggressive than taxpayers receiving refunds.[13]

One interpretation of these findings for tax policy purposes is that aggressive tax reporting increases as the time increases between when the transaction occurred and when it is reported for tax purposes. Taxpayers who owe money with their tax filings may be paying the taxes at least three months after the related income was received but taxpayers with refunds due have remitted their taxes to the government as the income was earned.

While the results of prior payment/refund studies can be attributed to differences in tax payment timing, the effect of a confounding variable cannot be eliminated. As stated before, taxpayers with balances due and refunds owed differ in the timing of their tax payments (the timing effect). In addition, taxpayers with balances due are paying a part of their taxes directly to the government with a check but overpaid taxpayers have paid all their taxes through a reduction of their take-home wages (the payment mechanism effect). Since taxpayers with balances due and refunds owed differ both in terms of tax payment timing and the payment mechanism, it is impossible to identify the tax structure feature(s) that contributes to the more aggressive behavior for taxpayers with payments due.[14]

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[12] The majority of these studies based the predictions of the payment/refund effect on the decision frame concept from prospect theory. These studies are discussed in more detail in the next section.

[13] Two taxpayers with identical liabilities could face different tax filing consequences because of differences in the amounts withheld or estimated tax payments made throughout the year. A taxpayer with lower withholding and estimated tax payments would owe more taxes at filing time while a taxpayer with higher withholding and estimated tax payments would owe less taxes or would be due a tax refund.

The Indirect Effect of Tax Structure Variables Via the Decision Frame

Decision Frames Characterized by Payments and Refunds

Recent studies have examined the relationship between the taxpayer's settlement amount at tax filing time (payment due or refund due) and the tax reporting decision (Clotfelter 1983; Robben et al. 1988; Hite et al. 1988; Schadewald 1989; Chang and Schultz 1990; Schepanski and Kelsey 1990; Dusenbury 1990). These "payment/refund" studies have examined the effect using both archival compliance data from the Tax Compliance Measurement Program (TCMP) (Clotfelter 1983; Chang and Schultz 1990) and tax reporting choices made in experimental settings (Robben et al. 1988; Hite et al. 1988; Schadewald 1989; Schepanski and Kelsey 1990; Dusenbury 1990). While the archival studies report results of tests for the payment/refund effect without providing an explanation, the experimental studies provide predictions that are founded in prospect theory.

Archival studies

Two studies using TCMP data from different years reported that taxpayers with balances due have lower voluntary compliance levels of reporting total tax liability than other taxpayers (Clotfelter 1983; Chang and Schultz 1990). Clotfelter (1983) does not interpret the relationship between the payment/refund and tax compliance as causal, suggesting instead that withholding decisions and reporting decisions are made jointly. Chang and Schultz (1990) conclude "although we were able to observe a strong result with respect to the withholding phenomenon, we were unable to identify the underlying cause" (1990, 92). A significant interaction between the payment/refund and the primary source of income prompted Chang and Schultz to suggest that an experimental approach is needed to disentangle confounding factors that are present in archival data bases.

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[14] The interpretation of experimental payment/refund effects is also unclear because there is some question as to how salient the differences in the tax structure variables that produced the payments and refunds have been to subjects. These studies have abstracted the bottom line payment/refund from the tax structure environment by presenting the tax reporting decision to the subjects after the payment or refund has been generated. That is, subjects have not been exposed to differences in timing or in the payment mechanism; tax reporting choices are made in situations that differ only in the sign of the settlement amount.

Experimental studies and prospect theory

Experimental researchers have suggested that predictions from prospect theory (Kahneman and Tversky 1979) can explain reporting decisions that are dependent on the sign of the bottom line tax liability (Robben et al. 1988; Hite et al. 1988; Schadewald 1989; Schepanski and Kelsey 1990; Dusenbury 1990). Prospect theory, an alternative to expected utility theory, describes how risky choices are affected by the decision maker's perception of the decision problem, or frame. Tversky and Kahneman (1981, 453) define the frame as "the decision-maker's conception of the acts, outcomes, and contingencies associated with a particular choice."

Once the decision problem has been framed, prospect theory assumes that the outcomes of the alternatives available can be represented simply as gains or losses. Categorizing frames as gains or losses is central to prospect theory's predictions because of the shape of the value function. Prospect theory proposes an S-shaped value function: concave for positive values, or gains; convex for negative values, or losses. In addition, the value function is steeper for losses. The unique shape of the value function causes risk preferences to be dependent on whether the outcomes are positioned (or framed) in the gain domain or the loss domain. Outcomes positioned in the gain domain result in risk averse behavior. Outcomes positioned in the loss domain result in risk-seeking behavior.

Tax researchers have assumed that tax reporting decisions constitute the type of risky choice envisioned by Kahneman and Tversky (1979). In the tax reporting context, risk averse behavior would be to report a taxable income item in the way that results in higher taxable income (conservative tax reporting). A risk seeking choice would be to report the item in the way that lowers taxable income (aggressive tax reporting) with the chance that the IRS might increase the tax liability upon audit.

Early tests of prospect theory's predictions were concerned with whether outcomes presented as either gains or losses prompted the predicted risk preferences;[15] how individuals might come to frame outcomes as gains or losses initially received little attention. Payment/refund studies have taken the same approach. Refunds are expected to be viewed as gains resulting in conservative reporting choices. Taxpayers with a balance due are expected to consider the payment a loss with a corresponding aggressive reporting choice.

The existence of a payment/refund effect on experimental tax reporting decisions has not been consistently supported. Robben et al. (1988) found the predicted payment/refund effect significant in one of four experiments when subjects made choices in a business simulation context. Hite et al. (1988) found the predicted results only for juror-subjects that were classified as low-income individuals. Schadewald (1989) found differences in reporting choices only when the alternatives were "labeled" as gains or losses by a tax practitioner. Both Dusenbury (1990) and Schepanski and Kelsey (1990) reported refund subjects to be more conservative than payment subjects.[16] The experimental results of Dusenbury (1990) and Schepanski and Kelsey (1990) are consistent with the results of the archival studies (Clotfelter 1983; Chang and Schultz 1990).[17]

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[15] The classic example in Tversky and Kahneman (1981) was asking individuals to make choices about the use of a new immunization drug. Respondents' choices were dependent on whether the consequences of the treatment were expressed in terms of the number of lives saved (gains) or the number of lives lost (losses).

Tests of Framing Effects in Payment/Refund Studies

The present study suggests an indirect effect of the tax structure variables as mediated through the individual's perception of the tax reporting choice problem, or the decision frame. The importance of the frame adopted by a decision maker has been recognized in a variety of decision contexts (e.g., industrial purchase decisions, consumer purchase decisions, flood insurance purchase decisions, preferences for immediate or delayed consumption). As previously discussed, researchers have used framing to explain payment/refund effects on tax reporting behavior (Robben et al. 1988; Hite et al. 1988; Schadewald 1989; Schepanski and Kelsey 1990; Dusenbury 1990). However, our understanding of individual tax reporting behavior has been limited by two assumptions made in the research designs to date: (1) the assumption that the frame can be manipulated and (2) the assumption that the choice resulted from the frame. The effect of these assumptions is discussed in more detail below.

First, most studies of framing effects on tax reporting decisions attempted to manipulate the frame adopted by subjects through differences in the experimental materials (i.e., some subjects were told they would make a payment while others were told they would receive a refund). If subjects made choices that were consistent with predictions, then the particular frames that the experimental materials were intended to convey were assumed to have been adopted. It is plausible that subjects adopted a particular frame since the information given to subjects tended to focus on the bottom line payment or refund. By providing this focus, the experimental materials may have already "framed" the decision problem for the subjects.[18] When subjects make choices consistent with prospect theory only after the researcher has formulated the alternatives to suggest either gains or losses, the ability to predict decision making in real-world decisions is open to question. Fischhoff (1983) suggests that if prospect theory is to have predictive ability, then some prediction must be possible of the frames that will be adopted.

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[16] Each of these five experimental studies varied on research design issues such as the type of reporting decision, type of subjects used, the complexity of the experimental materials, the presence or absence of cash payoffs, and between- or within-subjects designs. These differences could explain the inconsistent results.

[17] One concern is whether or not the relationship between payment/refund status and the tax reporting decision could be causal. With the exception of Clotfelter (1983), tax reporting researchers have not considered the control that taxpayers can exert over the settlement amount on the tax return at filing by choosing the level of withholding.

Second, if subjects make choices that are consistent with predictions, then it is assumed that the decision frame affected the tax reporting choice. Only two studies have attempted to relate some measurement of the frame that was adopted to the actual tax reporting decision. Both Chang et al. (1987) and Robben et al. (1988) reported that subjects who responded that they tended to think of tax payments as a loss were more risk seeking than those who viewed taxes as a reduction in a gain.

These two assumptions implicit in prior tax reporting research limit our understanding of the framing effect. If the predicted results are not found, an explanation that the intended frame was not adopted cannot be distinguished from the possibility that the reporting decision was not affected by the frame. Since the results of prior payment/refund studies have been inconclusive, identification of the decision-making environment characteristics that encourage the adoption of a particular frame as well as characteristics that cause the frame to affect the tax reporting choice would be useful.

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[18] Also, implicit in the assumption that the frame could be manipulated was the assumption that the relevant outcome to be framed was the settlement amount. With the exception of Chang et al. (1987), all studies of framing effects in tax reporting decisions have attributed the frame to the payment due or refund owed at filing. Focusing on the bottom line of the tax return ignores all the separate reporting decisions that have contributed to this bottom line amount. Both the Panel on Taxpayer Compliance Research (Roth et al. 1989) and Smith and Kinsey (1987) suggest that the examination of reporting decisions for individual items would be useful.

By measuring the decision frame separately from the choice, Fischhoff (1983) attempted to predict decision frames that could be related to choices in a manner consistent with prospect theory. Although Fischhoff was unable to find an association between the frames and choices, recent research in consumer behavior has been successful in both predicting the frame and the choice dependent on the adoption of a particular frame (Puto et al. 1985; Puto 1987; Rowe and Puto 1987; Qualls and Puto 1989). The literature described next provides the foundation for predictions of the decision frame as a function of tax structure variables.

The Relationship Between Time and the Frame

Determinants of the frame

While the original introduction of prospect theory by Kahneman and Tversky (1979) did not describe in detail how decision makers adopt particular frames, the process of framing was the focus of a subsequent paper (Tversky and Kahneman 1981). Tversky and Kahneman (1981) suggest that the frame is affected by the number of outcomes evaluated within a single psychological account. They

> use the notion of a psychological account, defined as an outcome frame which specifies (i) the set of elementary outcomes that are evaluated jointly and the manner in which they are combined and (ii) a reference outcome that is considered neutral or normal.[19] (1981, 456)

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[19] Prior research has generally assumed that the reference point is $0. Cash inflows, then, are viewed as gains and cash outflows are viewed as losses.

Tversky and Kahneman propose that one determinant of the number of outcomes accumulated in a single psychological account may be the temporal relationship between two related outcomes when they say "the outcomes of an act affect the balance in an account that was previously set up by a related act" (1981, 457).

Mental accounting: integration and segregation

Thaler (1985) further discusses how the number of outcomes included in a "mental account" can alter an individual's perception of outcomes. In the mental accounting framework, the evaluation of joint outcomes depends on whether the single outcomes are integrated or segregated.

> The question is how does the joint outcome (x,y) get coded? Two possibilities are considered. The outcomes could be valued jointly as v(x + y) in which case they will said to be integrated. Alternatively they may be valued separately as v(x) + v(y) in which case they are said to be segregated. (1985, 201)

Thaler (1985) considers four combinations of the joint outcome (x, y): (1) multiple gains where both x and y are positive; (2) multiple losses where both x and y are negative; (3) a mixed gain where the positive x is greater than the negative y; and (4) a mixed loss where the positive x is smaller than the negative y. Once the outcomes are either integrated or segregated, an evaluation of the outcomes is made using prospect theory's S-shaped value function.[20] Because of the shape of the value function, the value assigned to outcomes that are integrated is different from outcomes that are segregated. Whether integration or segregation of a joint outcome produces a higher value depends on the type of the joint outcome combination (i.e., multiple gains, multiple losses, mixed gain, mixed loss).

Thaler (1985) tested to see whether individuals preferred integration or segregation of joint outcomes in the manner that produces the highest value based on prospect theory's value function, the hedonic editing hypothesis (Thaler and Johnson, 1990). Subjects made judgments in four situations that corresponded to the four joint outcome combinations discussed above.[21] For each situation, the judgments of a majority of the subjects matched the predictions of the hedonic editing hypothesis.

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[20] In Thaler's (1985) application of prospect theory, the evaluation is being made for events or outcomes that have already transpired; they are not risky choices.

How time affects integration and segregation

Thaler (1985) noted that outcomes from acts that were related in time were more likely to be included in the same mental account; he suggested that accounts were "temporally specific" (1985, 200). Thaler and Johnson (1990) extended Thaler's mental accounting for multiple outcomes by recognizing that "decisions are rarely made in temporal isolation" (1990, 643). Decision makers generally have information about prior outcomes when facing a decision concerning a current outcome. The purpose of their work was to identify when decision makers take prior outcomes into account.

To test how people actually frame joint outcomes when left to their own devices, Thaler and Johnson needed a way to give subjects choices that would reflect how they framed outcomes.

> One way to do this is by giving subjects a choice about the timing of events. For the next experiment, we assumed that the process of segregating a pair of events is facilitated by having the events occur on different days, and conversely that integrating events is easier if the events occur on the same day. (1990, 648)

Subjects received pairs of events similar to those used in Thaler (1985) and were asked whether they preferred the two events to happen "on the same day or a week or two apart" (1990, 648). The results reported only include outcomes that were either multiple gains or multiple losses.[22]

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[21] Subjects were asked to judge which of two hypothetical people was happier (or more upset) based on events that happened. Mr. A experienced two events while Mr. B experienced one event that was the financial equivalent of Mr. A's two events. Thaler reasoned that in situations where Mr. A was judged to be more satisfied, individuals preferred segregating the two events. When Mr. B was judged to be more satisfied, individuals preferred the integration of the two separate events into a single outcome.

Individuals' preferences for separating or combining positive and negative events other than financial outcomes were recently examined by Linville and Fischer (1991). The purpose of the research was to compare the responses to predictions of both the hedonic editing hypothesis and the researchers' proposed renewable resources model.[23] The researchers gathered individuals' preferences for two events happening on the same day or on different days during a one-week period. While the results of the research are not directly related to the present research,[24] Linville and Fischer's use of individuals' preferences for the timing of events as a measure of whether two events are integrated or segregated is relevant.

Relevance to current topic

A tax reporting decision for a single taxable income component could be framed by an individual in two ways depending on the number of transactions combined in a single psychological account. First, both the initial transaction (receipt of income or payment of expense) and the resulting tax impact could be included jointly in an account (integration). Alternatively, the initial transaction and the resulting income tax effect could be accounted for separately in distinct accounts (segregation).[25]

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[22] The subjects' responses for multiple gains were consistent with the hedonic editing hypothesis but responses for multiple losses were not. The results of several other experiments are also reported. Further testing is reported on subjects' difficulty in integrating multiple losses. The final experiments reported give subjects risky choices to make where subjects had a small chance of actually losing money.

[23] The renewable resources model draws from literature on stress and coping techniques.

[24] Linville and Fischer (1991) were especially interested in whether preferences for combining or separating events were constant across events from different domains. Another issue was whether events from different domains could be combined. Subjects made choices for events from academic, financial and social domains.

Since integration or segregation of an initial transaction and the tax impact determines the frame which can affect the tax reporting decision, the impact that timing, or temporal distance, has on an individual's integration or segregation of joint outcomes is relevant to the present research. Predictions of the use of integration or segregation in tax reporting decisions and the resulting decision frames are discussed in more detail in Chapter 3.

The Present Research

The purpose of the present study is (1) to examine the effect of tax structure variables on tax reporting choices; (2) to examine the effect of tax structure variables on decision frames; and (3) to examine the effect of decision frames on tax reporting choices. Both the direct effects and the indirect effects (via the decision frames) of taxable income components and tax payment timing on tax reporting choices will be examined.

The literature discussed in this chapter suggests that the present U.S. tax structure produces differences in certain attributes (e.g., opportunity, fairness, complexity, and ambiguity) associated with income and expense items. However, it is possible that taxable income components affect the tax reporting decision process and choice, even when objective measures of these attributes are held constant. The current research will examine differences in tax reporting decisions for income and expense items, holding the level of other attributes constant.

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[25] Integration or segregation of the tax consequences of transactions are apparent in contexts other than tax reporting. For example, financial institutions offering individual retirement accounts often focus the consumer's attention to the tax savings, not the $2,000 investment required. Lucky winners of lotteries or gambling often view the taxes due on the winnings as being quite separate from the amount won.

The current research extends the prior research related to the effect of tax payment timing in two ways. First, by explicitly identifying the effect of tax payment timing as the variable of interest (as opposed to payment/refund status), the payment mechanism will be held constant across different tax payment timing conditions.[26] Second, experimental subjects will be exposed to real differences in tax payment timing. Differences in tax payment timing are operationalized by varying the temporal distance between the transaction giving rise to an income or expense item and the tax payment.

In addition to these direct effects, the present study provides a model of the decision frame as a function of the tax structure variables. Predictions for the decision frame that will result from specific levels of the tax structure variables are developed. By measuring the decision frame, the predictions of the decision frame model can be tested. In addition, by modelling the decision frame and the tax reporting choice separately, the strength of the relationship between the decision frame and the reporting choice can be measured. The current study extends prior research on the effects of framing in tax reporting decisions by (1) predicting which frame should result from a given set of tax structure variables; (2) eliciting the frame adopted by subjects; and (3) measuring the strength of the relationship between the decision frame and the tax reporting choice. The present study also extends prior research by examining how reporting decisions for individual items on the tax return might be framed.

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[26] The effect that the payment mechanism may have on tax reporting choices is an equally interesting question. However, the study will not consider payment mechanism effects.

CHAPTER 3
DEVELOPMENT OF MODELS AND HYPOTHESES

Introduction

The following discussion will first describe possible decision frames that a taxpayer might adopt in a tax reporting decision for a single taxable income component. Prospect theory's predictions (Kahneman and Tversky 1979) of the effect that these decision frames can have on tax reporting choices is also explained.

Based on this discussion, two models are presented in this chapter. First, a model of the decision frame is developed. The model presents the decision frame as a function of the two tax structure variables: taxable income components and tax payment timing. Predictions are developed for the selection of a particular decision frame given the tax structure variables. Next, a model will be presented for the tax reporting choice. The second model describes the effect that the specific decision frame adopted has on the tax reporting choice (the indirect effect). In addition, the discussion following the second model suggests how the tax structure variables might impact the tax reporting choice apart from their effect on the frame (the direct effect). By modelling the decision frame and the tax reporting choice separately, tax structure variables can directly affect the reporting decision, or indirectly affect the decision through the taxpayer's formulation of the reporting decision, or frame.

Integration and Segregation of Tax Reporting Outcomes

Since the purpose of this study is to examine the influence of basic tax structure features, the focus is on discrete levels of taxable income and tax liability. Each taxable income component reported on a tax return has a specific impact on the total tax liability. For income (expense) items that enter the taxable income calculation, the related effect is an increase (decrease) in the tax liability. The following analysis assumes that increases in the tax liability are viewed as losses while decreases in the tax liability are viewed as gains.

Tax reporting decisions for taxable income components could be framed by an individual in two ways depending on the number of transactions included in a psychological account. First, both the initial transaction (receipt or payment) and the resulting tax impact could be included jointly in an account (integration). If integration is employed, all possible outcomes considered in making a tax reporting choice would include the effects of both the initial transaction and the resulting tax consequences. Alternatively, the fundamental transaction and the resulting income tax effect could be accounted for separately in distinct accounts (segregation). If segregation is used in mental accounting, the outcomes possible in the tax reporting choice problem would include only the tax consequences associated with the taxable income component.

The integration and segregation of tax consequences of single taxable income components is analogous to the framing outcomes suggested by Jackson and Jones (1985) and Chang et al. (1987). These researchers proposed that taxpayers may view the total tax liability as a loss (segregation) or as a reduction in taxable income (integration). The present research differs in the assumption of the relevant level of taxable income and related tax consequences that are integrated or segregated. Here the tax consequences to be framed are those of a single taxable income component rather than the total tax liability.

A Numerical Example of Integration and Segregation

Table 3-1 presents four problem representations of the tax reporting decision for both income and expense items resulting from either integration or segregation. The decision framed in Table 3-1 is a reporting choice for an ambiguous taxable income component in the amount of $1,000. The tax effect of this component is $300. If the taxpayer reports the item in an aggressive manner, the chance that the taxpayer's reporting of the item will not be detected and adjusted by the authorities is 50%. If the tax liability is adjusted, penalties and interest of $300 will be assessed.[1]

In each of the four problem representations, one choice represents a riskless alternative and the other choice is a risky option. The choice that results in higher taxable income is riskless because there is no chance that the IRS will increase the tax liability upon audit. The choice that results in lower taxable income is risky because there is a chance that the IRS could later increase the tax liability and assess penalties and interest. For an income (expense) item, the riskless choice is to report (not deduct) the amount while the risky choice is to not report (deduct) the amount.

Note from Table 3-1 that if an income item and the related tax are integrated in a single mental account, both the riskless choice and the risky choice have positive outcomes (gains). When an income item and the related tax are segregated in distinct mental accounts, the riskless choice and the risky choice both have zero or negative outcomes (losses). If an expense item is integrated with the related tax savings, both the riskless choice and the risky choice have negative outcomes (losses). If an expense item is segregated from the related tax savings, the riskless choice has a zero outcome while the risky choice includes both positive (gain) and negative (loss) outcomes.

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[1] The present probabilities and penalty and interest amounts are used only for expository purposes. Amounts equally unrealistic have been used in tax reporting experiments testing predictions of prospect theory in order to present the subjects with choices having equal expected values (i.e., the expected value of the risk averse, conservative reporting choice is equal to the expected value of the risky, aggressive reporting choice). For example, in Schepanski and Kelsey (1990) the joint probability of being audited with a resulting increase in tax liability ranged from 20% to 45% while the combined interest and penalty rates varied from 120% to 400% of the increased tax liability. Jackson and Jones (1985) suggest that experimenters include choices where the expected values of the choices are not equal. In real life, the expected value of reporting an item in an aggressive manner (i.e., a risky choice) is generally greater than reporting the item in a conservative way (i.e., a riskless choice).

How Mental Accounting Affects Tax Reporting Choices

Although the tax reporting choice model is discussed later in the chapter, it may be helpful now to explain how the integration and segregation of outcomes are related to tax reporting choices. As described in Chapter 2, the sign of the outcomes (either positive or negative) that results from integration or segregation is important because of the predictions of prospect theory (Kahneman and Tversky 1979).

Figure 3-1 displays a hypothetical value function. Objective amounts of gains and losses are plotted on the horizontal axis while the subjective values corresponding to those amounts are plotted on the vertical axis. The figure illustrates how integration and segregation affect the value associated with the tax reporting choice alternatives for income items from Table 3-1. The possible outcomes resulting from integration and segregation are labeled with an "I" and an "S", respectively.

Under integration, the riskless choice results in a gain of $700. The risky choice has two possible outcomes, a gain of $1,000 or a gain of $400. Because of the shape of the value function, the increase in value from $700 to $1,000 is less than the decrease in value from $700 to $400. Stated another way, if the risky option is chosen, the increased gain that results if the tax return is not audited (and no tax is paid) is worth less than the loss in value if the tax return is audited (and tax plus penalty and interest are paid). In this case, a taxpayer would not want to risk the chance of an audit. Risk averse behavior, or conservative tax reporting is predicted.

If segregation is used in mentally accounting for the tax consequences of an income item, the riskless choice results in a $300 loss. Under the risky option, two alternatives are possible, $0 and a $600 loss. As shown in Figure 3-1, because of the steepness of the value function in the loss domain, the reduction in value from a $300 loss to a $600 loss is smaller than the reduction in value that occurs from $0 to $300. Stated another way, avoiding a $300 loss is worth more than keeping a $300 loss from increasing to $600. In this case, risk seeking behavior, or aggressive tax reporting is predicted.

Figure 3-2 demonstrates similar results for integration and segregation of the tax consequences for expense items from Table 3-1. Under integration, the increase in value from having a $700 loss instead of a $1,000 loss is greater than the decrease in value from having a $1,300 loss instead of a $1,000 loss. Risk seeking behavior, or aggressive tax reporting is predicted. Under segregation, the increase in value from having a $300 gain instead of $0 is less than the decrease in value from having a $300 loss instead of $0. To avoid the loss, risk averse behavior, or conservative tax reporting is predicted.

Table 3-2 summarizes the predicted tax reporting behavior for the four problem representations. For both income and expense items, different tax reporting choices are expected depending on whether integration or segregation is employed. The actual choice problem faced by a taxpayer with either an income reporting decision or an expense reporting decision is the same; what differs is the way the tax consequences of the transaction are "mentally accounted" for by the taxpayer.

The Effect of Tax Structure Variables on the Decision Frame

The Decision Frame Model

Integration or segregation of a taxable income component and the related tax impact can cause the tax reporting decision to appear to the taxpayer as a choice between outcomes that are gains or outcomes that are losses. The following model of a taxpayer's adoption of a gain or a loss decision frame is proposed:

Decision frame = f(taxable income component, timing)

where
Decision frame = taxpayer's reported use of either a gain or a loss frame in making the tax reporting choice;[2]

Taxable income component = taxable income component that taxpayer made reporting choice for, either income or expense;

Timing = tax payment timing, either current or delayed.

The Effect of Taxable Income Components

Recall from the discussion above that reporting choice outcomes for an income item can be viewed as gains if the income item is integrated with the related tax or as losses (or zero) if the income item is segregated from the potential tax. Alternatively, a reporting choice for an expense item results in a loss frame when the expense item is integrated with the potential tax savings. When an expense item is segregated from the tax savings, the frame adopted is mixed (but shown as a gain since the predicted tax reporting choice matches that resulting from a gain frame). These results are summarized in Panel A of Table 3-3. As Panel A demonstrates, the frame adopted is not unambiguously determined by the specific taxable income component. The frame depends on both the taxable income component and whether the related tax consequences are integrated with or segregated from the taxable income component. Whether the tax consequences will be integrated in a mental account with the initial transaction or segregated in a separate account depends on the tax payment timing.

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[2] While the segregation of the expense and the tax benefit results in mixed outcomes as explained above, the model views the mixed outcome as a gain frame since prospect theory predicts conservative tax reporting choices (risk aversion) for both the gain frame and the mixed outcomes.

The Effect of Tax Payment Timing

Prior research discussed in Chapter 2 suggests that outcomes related in time are more likely to be combined in a single account (Thaler 1985; Thaler and Johnson 1990; Linville and Fischer 1991). As discussed in Chapter 2, differences are possible in the temporal distance between the initial transaction and tax payment. Differences in tax payment timing are represented by varying the temporal distance between these two events. Current reporting is when the tax payment is made soon after the initial transaction takes place. Delayed reporting is when the tax payment is made sometime later than the initial transaction.

The tax effect of an initial transaction (receipt or payment) reported to the taxing authority soon after the transaction has taken place (current reporting) is likely to be included in the mental account with the transaction (integration). If the tax payment is separated in time from the transaction (delayed reporting), the tax effect is likely to be entered into a separate mental account (segregation). The effect of timing is summarized in Panel B of Table 3-3. Predictions of the adoption of a gain or a loss frame result from the joint effects of taxable income components and tax payment timing.

The Taxable Income Components and Tax Payment Timing Interaction

When the effect of timing as shown in Panel B of Table 3-3 is combined with the results from Panel A of Table 3-3, it is possible to predict an individual's adoption of either a gain or a loss frame, dependent on both the taxable income component and the tax payment timing. The predictions are shown in Table 3-4 and stated in the following hypothesis:[3]

> H1: Individuals making reporting choices for income items when reporting is current (delayed) will adopt gain (loss) frames. Individuals making reporting choices for expense items when reporting is current (delayed) will adopt loss (gain) frames.

The Effect of Tax Structure Variables on Tax Reporting

The Tax Reporting Choice Model

In addition to affecting the tax reporting choices indirectly through the frame, the tax structure variables (taxable income components and tax payment timing) could affect the tax reporting decision directly. The following discussion will first focus on the effect that the decision frame has on the tax reporting choice. Next, expectations for the direct effects of taxable income components and tax payment timing on reporting choices are presented.

The following model of the taxpayer's tax reporting choice is proposed:

Tax reporting choice = g(decision frame, taxable income component, timing)

where

Tax reporting choice = a choice of aggressive or conservative tax reporting;

Decision frame = taxpayer's reported decision frame for this choice, a gain or a loss;

Taxable income component = taxable income component that taxpayer made reporting choice for, either income or expense; and

Timing = tax payment timing, either current or delayed.

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[3] All research hypotheses are stated in the alternative form.

The model can also be written as

Tax reporting choice = g(f(taxable income component, timing), taxable income component, timing).

The Effect of the Decision Frame

The model of the decision frame described the effects of tax structure variables on the taxpayer's tax reporting decision frame but did not include the effect of an individual's frame on the reporting choice. Since prospect theory predicts different risk preferences depending on whether the decision is evaluated as a gain or a loss, the tax reporting decision should be related to the taxpayer's adoption of a gain or a loss frame. The following hypothesis describes the predicted effect of the decision frame adopted:

> H2: Individuals adopting gain frames will be more likely to choose conservative tax reporting while individuals adopting loss frames will be more likely choose aggressive tax reporting.

If a gain frame is adopted, prospect theory predicts conservative tax reporting. Recall from Table 3-4 that those making reporting decisions for both (1) income items in the current reporting condition and (2) expense items in the delayed condition are expected to choose a gain frame. If a loss frame is adopted, prospect theory predicts aggressive tax reporting. From Table 3-4, individuals expected to choose loss frames include both (1) those making reporting decisions for income items in the delayed reporting condition and (2) those making reporting decisions for expense items in the current reporting condition.

The Effect of Taxable Income Components

IRS estimates of noncompliance for all taxpayers indicate that underreporting income is more prevalent than overstating expenses (Roth et al. 1989, 43-45). However, in tax reporting environments where the opportunity for aggressive tax reporting is relatively constant between income and expense items (e.g., business and rental income), voluntary compliance levels for expenses appear to be lower than average (Kagan 1989, 84). Differences in aggressiveness will be examined without the confounds present in the IRS data bases. Since the effect of these confounds on taxpayer aggressiveness is not known, it is not possible to predict the taxable income component that will produce the most aggressive tax reporting behavior. The following hypothesis describes the effect that the taxable income component is expected to have on the tax reporting choice:

> H3: Individuals making tax reporting choices for income items will differ in the aggressiveness of their choices from individuals making tax reporting choices for expense items.

The Effect of Tax Payment Timing

By looking at tax payment timing without the possible confound of the payment mechanism, the interpretation of prior research may be clarified. If previous findings of the payment/refund effect are related to tax payment timing, then delayed reporting should result in more aggressive reporting than current reporting. H4 provides the expectation of the impact that timing will have on tax reporting decisions:

> H4: Tax reporting decisions for initial transactions that are temporally separated from the tax filing (delayed reporting) will be more aggressive than tax reporting decisions made for transactions that are more closely related in time to the tax filing (current reporting).

Summary

In this chapter, models of both the decision frame and the tax reporting choice were presented. Utilizing the concepts of integration and segregation from mental accounting, the decision frame is described as a function of two fundamental aspects of the tax structure: taxable income components and tax payment timing. Because of the effects of framing on risky choices described in prospect theory, the decision frame is included as a explanatory variable in the tax reporting choice model. In addition, the direct effects of the tax structure elements are included in the tax reporting choice model. Chapter 4 describes in detail the experiment that was performed to test the predictions of these two models.

Table 3-1
Representation of Tax Reporting Choices as the
Result of Integration or Segregation

	Integration	Segregation
Income	The riskless choice is to report the income; 100% chance of having $700 gain [$1,000 income - $300 tax], OR The risky choice is not to report the income; 50% chance of not getting audited and having $1,000 gain [$1,000 income], 50% chance of getting audited and having $400 gain [$1,000 income - $300 tax - $300 penalties and interest].	The riskless choice is to report the income; 100% chance of having $300 loss [$300 tax], OR The risky choice is not to report the income; 50% chance of not getting audited and having $0, 50% chance of getting audited and having $600 loss [$300 tax + $300 penalties and interest].
Expense	The riskless choice is not to deduct the expense; 100% chance of having $1,000 loss [$1,000 expense], OR The risky choice is to deduct the expense; 50% chance of not getting audited and having $700 loss [$1,000 expense - $300 tax savings], 50% chance of getting audited and having $1,300 loss [$1,000 expense + $300 penalties and interest].	The riskless choice is not to deduct the expense; 100% chance of having $0, OR The risky choice is to deduct the expense; 50% chance of not getting audited and having $300 gain [$300 tax savings], 50% chance of getting audited and having $300 loss [$300 penalties and interest].

Table 3-2
Tax Reporting Choices Predicted From
Integration and Segregation

	Integration	Segregation
Income	Gain frame results; conservative tax reporting is chosen; income is reported.	Loss frame results; aggressive tax reporting is chosen; income is not reported.
Expense	Loss frame results; aggressive tax reporting is chosen; expense is deducted.	Mixed frame results; conservative tax reporting is chosen; expense is not deducted.

Table 3-3

Panel A
Decision Frames Resulting From Integration and Segregation

	Integration	Segregation
Income	Gain	Loss
Expense	Loss	Gain (Mixed)

Panel B
Predictions of the Use of Integration and Segregation Due to Differences in the Tax Payment Timing

Current	Delayed
Integration	Segregation

Table 3-4
Predicted Interaction Between Taxable Income Component and Timing of Tax Payment to Predict Adoption of Decision Frame

	Current	Delayed
Income	Gain	Loss
Expense	Loss	Gain (Mixed)

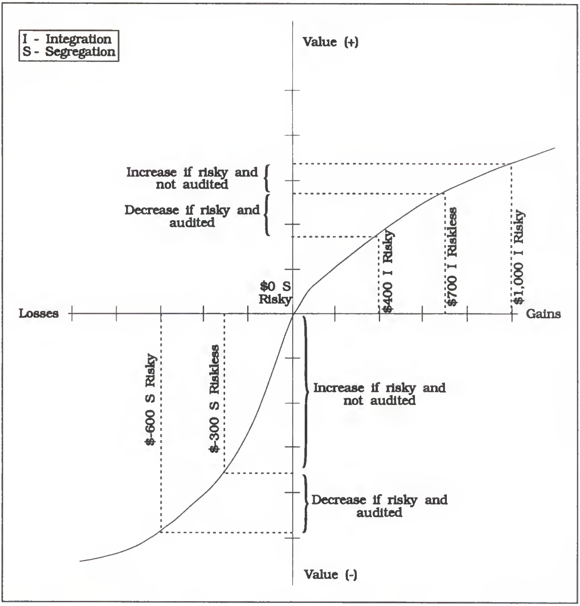

Figure 3-1
Integration and Segregation of
Tax Reporting Outcomes for Income Items

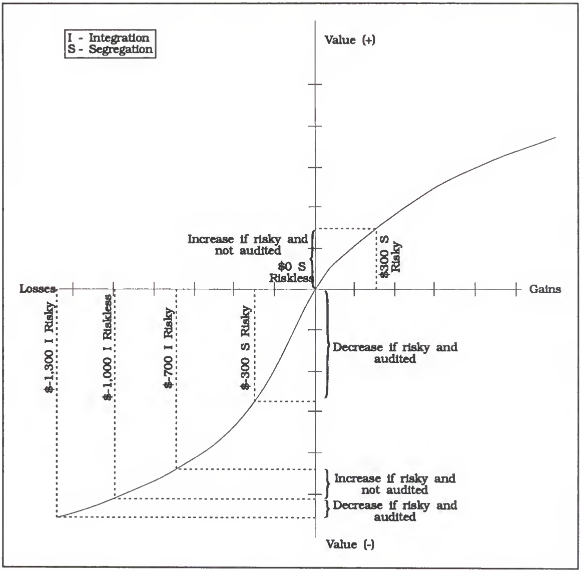

Figure 3-2
Integration and Segregation of
Tax Reporting Outcomes for Expense Items

CHAPTER 4
RESEARCH DESIGN AND DATA ANALYSIS METHODS

Introduction

This chapter describes the research method used to test the hypotheses presented in Chapter 3. First, the design of an experiment that was conducted to investigate the effects of taxable income components and tax payment timing is discussed. Next, the chapter describes the data analysis methods, which require recognition of the relationship between the decision frame model and the tax reporting choice model. The data analysis section also provides a discussion of the predicted results.

Experimental Design

Overview

This section of Chapter 4 describes the experimental design in detail. The experimental task is outlined first. The models presented in Chapter 3 were tested in the context of a business simulation that was conducted over a four-week period. Subjects assumed the roles of owners of a small business, Happy Car. One hundred and ninety-eight graduate and undergraduate students in the College of Business Administration at the University of Florida participated in the study. To give the subjects a reason to care about the tax reporting choice they made and to motivate them to participate in the experiment, subjects earned lottery tickets based on the decisions made in the study. These tickets were entered into a lottery; eleven cash prizes were awarded.

The operationalization of the independent variables, taxable income components and tax payment timing, is discussed next. Both tax structure variables were manipulated between-subjects. In addition, the order of the experimental materials used to measure the decision frame was manipulated. Each subject was randomly assigned to a single experimental treatment condition.[1]

The tax reporting choice examined is the choice of aggressive reporting (i.e., resulting in lower taxable income) or conservative reporting (i.e., resulting in higher taxable income) of a taxable income component where the proper tax treatment of the component is ambiguous or uncertain.[2] The taxable income component treatment was operationalized by presenting subjects with a tax reporting choice for either an income item or an expense item. The tax payment timing treatment was operationalized by varying the temporal distance between the occurrence of the transaction involving the taxable income component and the tax payment timing.

Next, the experimental design section describes the measurement of the two dependent variables: the tax reporting choice and the decision frame. The final part of the experimental design section introduces two experimental control variables, the subjective audit rate and subjective uncertainty estimate, and a covariate, risk attitude, that are included in the tax reporting choice model. As this overview of the experimental design demonstrates, the specific method of testing the research hypotheses is complex. A time line diagram of the experimental design is provided in Figure 4-1.

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[1] In the tax reporting choice model, the experimental manipulations result in a 2 (taxable income component, i.e., income or expense) X 2 (timing, i.e., current or delayed) fully crossed design. In the decision frame model, these two factors are also crossed with the order manipulation resulting in a 2 X 2 X 2 design.

[2] An alternative tax reporting choice was an item where the proper tax treatment was not uncertain (i.e., income that is clearly taxable or an expense that is clearly not deductible). However, due to concerns about individuals' willingness to self-report tax evasion (Elffers et al. 1987), a choice concerning aggressive or conservative tax reporting behavior (rather than tax evasion) was selected.

Experimental Task

General setting

The particular research questions at hand dictated the need for a relatively unique experimental setting. Differences in timing are critical to H1 and H4; an extended time period for the study was necessary. Also, the study had to be presented in a way that did not make the purpose of the extended time period or the manipulation of the tax payment timing obvious to the subjects. Since subjects in the delayed condition needed to be exposed to a real temporal distance between the occurrence of the transaction and the tax payment timing, some other task was needed to obscure the true purpose of the time difference.

For these reasons, the tax reporting choice was made in the context of a business simulation that took place over four weeks. The subjects were told that the purpose of the study was to contrast the level of an individual proprietor's withdrawal of funds from an unincorporated business with the optimal salary and dividend payment policy of a corporation. Disguising the true nature of the study was not expected to alter the decisions made by the subjects. Rather, the motivations for concealing the true purpose were (1) to present a plausible explanation for the extended time period and (2) to allow the tax reporting decision to be made along with other business decisions.[3]

Subjects were asked to assume the role of the owner of an unincorporated business, Happy Car. Prior to receiving information for the first period, subjects were given background information for Happy Car and general instructions for the experiment (see Appendix A for a copy of these materials).

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[3] Another benefit from disguising the true purpose of the study is that an experiment described as a tax reporting study to the subjects might introduce a bias to their responses. Demand effects for aggressive tax reporting could be induced by describing the experiment as a tax reporting study (Hessing et al. 1988).

In the experimental setting, each week represented a separate business period. The subjects were asked to complete three tasks in the experiment: (1) compute Happy Car's total cash flow each period; (2) decide how much of Happy Car's cash flow to withdraw as compensation for each period; and (3) prepare an income tax return for Happy Car in the fourth period (week). Each week subjects received folders containing instructions, the current period's cash flow items, a cash flow computation form, and a withdrawal form (see Appendix A for copies of these materials).

Cash flow information

In each of the four weeks, subjects were given information about Happy Car's cash flow for that business period. The cash flow information was provided to make the setting realistic and was not intended to affect the decision frame or the tax reporting choice. The cash flow information included some variability between periods but always resulted in a positive cash flow. All subjects received the same total cash flow although the amount received each week varied with the timing condition.[4]

Each cash flow item was given to the subject on a separate slip of paper. A description of the item was included on the slip. In addition, if the item had special tax consequences (i.e., not taxable or not deductible) that information was also included in the description.[5]

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[4] The total cash flow received was $210,200.

[5] The tax information included on the slip for the taxable income component item is described in more detail below. Other cash flow items with special tax consequences included nontaxable municipal bond interest, a nondeductible advance to an employee, and the nontaxable repayment of the employee advance.

The first task that subjects completed each period was to compute Happy Car's total cash flow. Included on the cash flow computation form was a calculation of the balance in the business cash account, equal to the cash flow for the current period minus withdrawals plus the beginning cash balance. In the final period, the amount of the tax liability on the tax return also reduced the business cash account. The business cash account affected the number of lottery tickets earned (discussed below).

Withdrawals

Each week, after computing Happy Car's cash flow for that period, subjects were asked to indicate the amount that they would like to withdraw from the business as their compensation. Subjects were instructed that their withdrawals could not exceed the balance in the business cash account less the amount owed for the tax liability in the final period. The withdrawals affected the number of lottery tickets earned (discussed below).

The sole purpose of the withdrawals was to disguise the purpose of the study. While the treatment conditions were not intended to affect the withdrawals, the withdrawals were tested for differences across treatment conditions. The results of this test are reported in Chapter 5.

Tax returns

Subjects were instructed prior to the first period that tax returns would be filed and tax payments would be made in the final period.[6] Also at this time, subjects were instructed that the applicable tax rate was 33%, that some of the returns would be audited, and that if an audit adjustment was made a penalty of 50% of the additional tax would reduce the total withdrawals.

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[6] The tax return included the taxable income accumulated over all four periods.

In the final period, subjects were asked to prepare tax returns that followed the general format of Schedule C, Profit or Loss from Business, but in simplified form (see Appendix A for a copy of the tax return form and instructions). The instructions to the tax return advised students that the taxable income would not equal the total cash flow for three reasons: (1) some cash flow items were not included on the tax return; (2) a deduction for depreciation was allowed on the tax return; and (3) the amount of cost of goods sold rather than the amount of inventory purchased was deductible on the tax return. These three items were included in the experimental materials so that subjects would understand that the taxable income reported on the tax return was not expected to equal the total cash flow. Without such differences, subjects may have felt that they had to report the taxable income component item consistent with the item's effect on cash flow.[7] The cash flow items from the previous periods were returned to the subjects in the final period to facilitate completion of the tax return.

Although subjects were instructed that some tax returns would be selected for audit, no explicit audit rate was given. As explained below, each subject's subjective audit rate was measured and included in the tax reporting choice model. After the tax returns were filed, 5% of the returns, or 10 returns, were chosen at random for an audit. The returns selected for audit were examined to determine the treatment of the taxable income component item. If the taxable income component item was reported aggressively (i.e., omitted if an income item, deducted if an expense item), a random number generator was used to determine the

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[7] Cash flow items that were not to be reported on the tax return included municipal interest, an advance made to an employee and the subsequent repayment of the advance. An explanation of the tax treatment of these items was included with the cash flow item when received. The information for the depreciation and cost of goods sold adjustments was included on the tax return.

"true" tax treatment of the item.[8] Of the 10 returns selected for audit, adjustments were made on 3 returns. None of the 10 returns selected for audit required audit adjustments for items other than the taxable income component item.[9]

Subjects

When studying a complex decision environment in an experimental setting, a trade-off exists between the types of questions that can be asked in an experiment and the ability to generalize the results from experiments. Subjects drawn from the general public are likely to represent the group to which researchers wish to extend their experimental results. However, using these subjects necessarily means that the task has been extremely simplified. This simplification may raise concerns about whether the experimental task from which researchers seek to generalize their results actually exists in the "real world."

Another approach in research efforts to answer complex questions is to begin with subjects able to deal with the task, even if this group of subjects is not making such real world decisions currently. The experimental task described above requires subjects that meet two qualifications: (1) they must understand the implications of the cash flow and (2) they must be available for weekly sessions over an extended period. Undergraduate and graduate business students may be the only group that possesses the requisite characteristics.

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[8] The description of the taxable income component advised the subjects that there was a 50% chance that the proper tax treatment was excluding the income (or deducting the expense).

[9] Subjects also made tax reporting choices for all other items of taxable income even though the proper tax treatment for items other than the taxable income component item was not uncertain. It was possible for subjects to understate unambiguous income items or overstate unambiguous expense items. It appeared that some subjects made unintentional errors; only one subject's tax return appeared to include deliberate tax cheating.

Subjects were recruited from 33 different sections of undergraduate and graduate accounting and undergraduate business policy courses. When students were initially contacted, they were informed that it would be necessary for them to attend an experimental session once a week for several weeks. They were also told that they would earn a chance to win a cash prize as the result of their participation in the experiment (see Appendix A for a copy of the introduction letter).

Students that were interested in participating chose the most convenient experimental session from 23 different day-time combinations. Students that were recruited from the introductory tax course were allowed time in class to participate in the experiment. Their participation in the experiment was not required for the class. Subjects participating in the experimental sessions and in the tax course received identical experimental materials.

Initially, 228 students signed up to participate in the study. The number of subjects that completed all four weeks of the study was 198.[10] Of the 198 subjects, 124 participated in the study in experimental sessions and 74 participated in the study in the tax course.

Table 4-1 contains a summary of demographic information for the subjects. This information was collected in the pre-experiment questionnaire. A majority of the subjects were male (61%), accounting majors (81%), seniors (59%), and in the 18-22 age group (70%). In addition, 37% of the subjects had held full-time jobs.

Table 4-2 contains a summary of information about the subjects' tax knowledge. This information was collected in the post-experiment questionnaire so that the subjects would not be sensitive to the researcher's interest in their tax knowledge. While the majority of subjects had never held a full-time job, 58% of the subjects had filed between 1 and 5 tax returns. In addition to their personal tax filing experiences, the subjects had been exposed to a significant amount of tax knowledge through tax courses, as 70% of the subjects had taken one or more tax courses. Of the subjects filing returns (165), 28% of them had encountered an item where the proper tax treatment of the item was uncertain.

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[10] The fairly high participation level can be attributed to several factors. First, the researcher visited each class section twice to recruit participants for the study. Second, the week before the first week of the study, all subjects were mailed post cards reminding them about the study. Finally, subjects participating in experimental sessions were telephoned each week on the night before they were to attend an experimental session.

Incentive Structure

Overview

In order to give the subjects motivation for making either an aggressive or conservative tax reporting decision for the taxable income component item, subjects earned lottery tickets based on the decisions they made in the study.[11] A monetary incentive was also deemed necessary since the subjects were asked to participate in an experimental session over several weeks.

Each ticket represented a chance to win one of 11 cash prizes.[12] A total of $850 was awarded in cash prizes as follows: one $200 prize, three $100 prizes and seven $50 prizes.[13]

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[11] Awarding cash payoffs to every subject was considered but the cost was prohibitive. See Bolle (1990) for a discussion on the use of randomized reward techniques as experimental incentives.

[12] Subjects picked up their tickets during the week following the last week of the study. Of 198 subjects, 13 did not return to pick up their tickets. The drawing was held in the week following the ticket pick-up. Subjects were notified of the time and place for the drawing but were not required to attend.

[13] When students were initially contacted about participating in the study, the information that they received described eight cash prizes. However, prior to the initiation of the study, the researcher received additional funds to pay subjects. In the first week of the study, the researcher announced the addition of three prizes to the subjects.

The method of earning tickets is described below. Prior to the first period, the system was described to the subjects in "Rules for Earning Tickets" (see Appendix A for a copy of the rules). Subjects read the rules on their own and were encouraged to ask questions. The rules were returned to the subjects in each of the four weeks of the study for their reference.

Measures were taken to assure that subjects understood the ticket system. First, upon reading the rules, subjects answered 11 questions intended to test their understanding of the system. The researcher checked each subject's answers and asked the subject if they had any questions. Most students answered all questions correctly. Second, the post-experiment questionnaire included a statement "I understand how tickets are earned in this study." The mean agreement response was 6.75 on a scale of 1 to 7. Third, the post-experiment questionnaire also included four true-false questions about the ticket system. The mean number of correct answers to the four questions was 3.73.

How tickets were earned

The incentive system was designed to reflect the real-world payoffs available to sole proprietors who must allocate the cash flow from their businesses between (1) amounts withdrawn as their current compensation and (2) amounts retained in the business to provide for future growth. Subjects could earn tickets in two different ways: (1) withdrawal tickets based on their withdrawal amounts and (2) value tickets based on the "value" of their firm at the end of the study. Subjects were instructed that they must participate in all weekly sessions to be eligible to earn tickets.

For each $10,000 of withdrawals, subjects earned 1 withdrawal ticket.[14] The timing of the withdrawals did not affect the number of withdrawal tickets earned. Although the number of withdrawal tickets was determined at the end of the study, each period subjects computed the cumulative withdrawals on the withdrawal form. Subjects were not required to make withdrawals.

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[14] The number of withdrawal tickets earned was equal to the total withdrawals at the end of the study divided by $10,000. Withdrawals of any fraction of $10,000 had to exceed .5 for a full ticket to be earned.

Subjects also earned value tickets based on the value of their firm determined at the end of the experiment. The four different firm value types earned tickets as follows: (1) high value firms earned 12 value tickets; (2) medium high value firms earned 6 value tickets; (3) medium low value firms earned 0 value tickets; and (4) low value firms lost 6 withdrawal tickets.

The value of the firm was a random event partially determined by the balance in the business cash account at the end of the study.[15] Subjects were given a schedule that detailed the probabilities of being one of the four different value types given the balance in the business cash account. Firms with higher balances in the business cash account had higher probabilities of being a high value firm. Firms with lower balances in the business cash account had higher probabilities of being a low value firm.

The total number of lottery tickets that the subject earned was the sum of the withdrawal tickets and the value tickets. The system was designed so that the expected number of total tickets was relatively constant regardless of the level of withdrawals.[16] Subjects were guaranteed that they would earn at least one ticket.

A subject could increase the number of total tickets earned by claiming an aggressive position on the taxable income component item. The reduced tax liability would result in a greater amount of cash flow available. The tax savings could either be withdrawn, increasing the number of withdrawal tickets, or retained in the business cash account, increasing the chances of earning more value tickets. If the subject was conservative, the expected number of tickets was 8.5. If the subject was aggressive, the expected number of tickets was 10.5. If the subject was chosen for an audit and an adjustment was made, the withdrawals were reduced for a penalty of 50% of the additional taxes.

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[15] The business cash account at the end of the study was the total cash flow received minus the total withdrawals and the tax liability.

[16] For all withdrawal levels, the expected number of tickets varied between 10 and 11 for aggressive subjects and between 8 and 9 for conservative subjects.

The average number of tickets was 9.97. The average number of tickets earned by conservative subjects, 9.08, was significantly lower than the average number of tickets earned by aggressive subjects, 10.4 (p-value=.0213).

Operationalization of Independent Variables

Taxable income components

The manipulation of taxable income components was between-subjects. Subjects were randomly assigned to receive either a cash receipt or cash payment item in their cash flow for which the proper tax treatment was uncertain. The amount of the item was $60,000 for both taxable income component conditions.[17]

The theoretical construct in this study is a basic financial transaction that results in either a cash receipt or cash payment with uncertain tax consequences. To eliminate confounding effects, the basic financial transaction must be the same for both income and expense items so that the decision context differs only in the sign of the taxable income component item (i.e., payment or receipt). The tax consequences of the item must be uncertain for both the taxpayer receiving the cash and the taxpayer paying the cash.[18]

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[17] The correct amount of taxable income if the subject reported the taxable income component item conservatively was $205,200 with a corresponding tax liability of $67,716. If the subject was aggressive, the taxable income and tax liability were $145,200 and $47,916, respectively.

The taxable income component item was either a cash receipt or payment in settlement of a lawsuit with the previous owner of Happy Car. The experimental materials describe the tax treatment of the item as very uncertain (i.e., 50% chance that aggressive reporting is correct, 50% chance that conservative reporting is correct) according to Happy Car's CPA. A copy of the description of the taxable income component item can be found in Appendix A.

Timing

The manipulation of Timing was also between-subjects. Subjects were randomly assigned to either the current or delayed condition.

The theoretical construct of interest is the temporal relationship between the occurrence of the fundamental transaction and the tax reporting decision for the transaction. Subjects in the delayed condition should be exposed to a longer time period between the transaction and the tax reporting than those in the current group. To operationalize this, the timing of the inclusion of the taxable income component item in cash flow was varied between the two conditions. Subjects in the delayed group received the taxable income component item in the second period while subjects in the current group received the taxable income component item in the final (fourth) period. Both the delayed and current timing conditions made the reporting decision in the final period.

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[18] Three possible transactions were identified: (1) a lawsuit settlement; (2) a payment between business associates; and (3) a generic business transaction. Judgments of 127 tax students from the University of Florida and 24 tax professionals from a Big 6 public accounting firm were used to select the transaction used in the experiment from the three alternatives. Responses from the tax students and tax professionals were elicited for the purpose of minimizing differences in attributes other than the sign of the transaction between the two sides of the transaction. Specifically, both the students and the tax professionals were presented with a hypothetical case containing either the payment or receipt side of one of the three transactions. Based on the facts presented, they responded to questions about the probability that the hypothetical taxpayer would be audited, the probability that the IRS would adopt an anti-taxpayer reporting position, and the probability that the facts in the hypothetical case came from an actual tax case. The responses indicated that the lawsuit settlement transaction had the smallest differences in other attributes between income and expense items.

Measurement of Dependent Variables

The hypotheses discussed in Chapter 3 describe the effects of the tax structure on two response variables, the decision frame and the tax reporting choice. The measurement of the tax reporting choice will be discussed first.

Tax reporting choice

The tax reporting choice was made by subjects when they completed the tax return. If the taxable income component item was reported on the tax return, it was listed as other taxable income or other deductible expenses.[19] The presentation of the taxable income component item was intended to suggest that the entire amount should be either reported or omitted.[20]

Specifically, the tax reporting choice was coded as aggressive for income items if the income was omitted from the tax return. Reporting the income item was coded as conservative behavior. The opposite is true for expense items. Omitting the expense from the tax return was coded as conservative behavior while reporting the expense was classified as aggressive behavior.

In addition, the strength of the subject's preference for the reporting choice was measured in the post-experiment questionnaire administered immediately following the completion of the tax return in the final period (see question 1 on the post-experiment questionnaire in Appendix A). Subjects responded to a question on "how certain are you of your decision" to report the income or deduct the expense. A higher score indicated a greater preference for aggressive behavior while a lower score indicated a greater preference for conservative tax reporting. The mid-point was labeled as neutral between the two.

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[19] The cash flow information included other items that were reported in this section of the tax return. Also, so that subjects would not feel that the item had to be reported, this section contained more lines than were needed.

[20] Only one of the 198 subjects reported an amount for the taxable income component item that differed from zero or the full amount. That subject reported one-half of the taxable income component item on the tax return.

Decision frame adopted

Before the measurement method is presented, it is appropriate to address some concerns with the measurement of this variable. Admittedly, attempting to measure an individual's decision frame is a difficult task and considerable measurement error may be present. Also, since the framing model under consideration in this study describes the decision frame only as a function of either integration or segregation of the tax consequences with the fundamental transaction, not all possible decision frames available to taxpayers are considered.

Another concern is the timing of the measurement. Ideally, the measurement of the frame would be made concurrently with the decision. However, since it is not possible for subjects to perform two tasks at the same time, the decision frame can be measured either before the decision is made or after the decision is made. If the frame is measured before the choice has been made, the frame measurement task could affect the subject's tax reporting choice. For this reason, measurement of the decision frame was made after the tax reporting choice.

As illustrated in Table 3-1 in Chapter 3, the tax reporting decision can be represented as a choice between a riskless alternative, conservative reporting, and a risky alternative, aggressive reporting. If aggressive reporting is chosen, the taxpayer faces a favorable outcome if an audit adjustment is not made and an unfavorable outcome if an audit adjustment is made. Depending on the formulation of the decision as the result of integration or segregation and the particular taxable income component, the tax reporting choice can be represented as a choice between gains or as a choice between losses.

The problem formulations in Table 3-1 provided the foundation for the decision frame measurement technique. Initially, the decision frame was to be measured by asking subjects to choose between two problem representations resulting from integration and segregation similar to those found in Table 3-1. To make the task easier for subjects, the problems were presented as decision tree diagrams. However, pre-test subjects found this measurement method confusing.

To further simplify the task, each outcome possible in the tax reporting context was presented in a separate statement for both problem formulations (i.e., integration and segregation).[21] Since three outcomes are possible in each formulation, this resulted in six statements that were used in measuring the decision frame.

The six statements were used to elicit subjects' decision frames in two different ways. In the first method, a rating task, subjects responded to how strongly they thought about each of the six statements in making their tax reporting choice. They indicated their response on a 7-point Likert-type scale with higher scores indicating that the subject thought about the statement a lot in making the tax reporting decision. Lower scores indicated that the subject did not think about the statement in making the tax reporting decision. The six statements can be found in questions 2-7 in the post-experiment questionnaire in Appendix A.

The six statements were presented in the same order of the three outcomes for all subjects: (1) conservative reporting; (2) aggressive reporting, no audit adjustment; (3) aggressive reporting, audit adjustment. However, the order of gain and loss frames within a given outcome was manipulated. Subjects were randomly assigned to receive either the gain frame first or the loss frame first in each of the three outcomes. The manipulation of the order of gain and loss frames is referred to as the Order effect.

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[21] The possible outcomes are (1) conservative reporting; (2) aggressive reporting, favorable outcome if no audit adjustment; and (3) aggressive reporting, unfavorable outcome if an audit adjustment.

The subjects' ratings of the six statements were a measure of how much they thought about each statement. Since subjects responded to both gain and loss statements for each of the three outcomes, some measure was needed of how much the gain frame was thought of relative to the loss frame. For each outcome, the gain frame rating was subtracted from the loss frame rating. This produced three response variables that measure the relative strength of how much gain and loss frames were considered for a particular outcome: DFRATE1, DFRATE2, DFRATE3.[22] The sum of the differences across the three outcomes, DFRATE, measures how much the gain frames were thought of relative to the loss frames across the three outcomes. If the difference variable was negative, then the subject tended to think more of the gain frame. If the difference variable was positive, then the subject tended to think more of the loss frame. If the difference was zero, then the subject thought equally about the gain and loss frames.[23] The sign of the difference variables provides an indication of the relative importance attached to gain and loss frames in the tax reporting decision making process; the magnitude of the difference variables provides a measure of the strength of the importance of frames.

The second method was a ranking task where subjects ranked the same six statements based on how descriptive each statement was of thoughts that the subject had in the tax reporting decision process. Subjects were instructed to rank the statement that was the most descriptive with a "1" and the statement that was the least descriptive with a "6" (see the post-experiment questionnaire in Appendix A for a copy of the ranking task). The statements were presented in the same order as in the first task.

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[22] The numbers (e.g., 1, 2, 3) correspond to the three outcomes. Outcome 1 is conservative reporting; outcome 2 is aggressive reporting, no audit adjustment; and outcome 3 is aggressive reporting, audit adjustment.

[23] A zero response could indicate that the subject thought a lot about both gain and loss frames or that the subject did not think a lot about either frame.

Again, some measure of the relative ranking assigned to the gain and loss frames was necessary. In the ranking task, a lower score indicates that the statement was more descriptive. The ranking of the loss frame was subtracted from the ranking of the gain frame. As before, three response variables are produced that measure the relative descriptiveness of gain or loss frames given a particular outcome: DFRANK1, DFRANK2, DFRANK3. The sum of the differences across the three outcomes, DFRANK, measures the relative descriptiveness of gain or loss frames across the three outcomes. If the difference variable was negative, then the subject ranked the gain frame as being more descriptive than the loss frame. If the difference variable was positive, then the subject ranked the loss frame as being more descriptive than the gain frame.[24]

Experimental Control Variables and a Covariate

Subjective audit rate

Because it is well-established that taxpayers consistently overestimate the probability of audit (Roth et al. 1989, 97), setting an audit probability in an experimental setting is a difficult task. Some of the subjects participating in the experiment had been exposed to information about the actual audit rate in tax courses. For those subjects with increased knowledge about the IRS, the audit rate may seem too high. For subjects who have not had tax courses, an experimental audit rate could seem unrealistically low. Whether or not an experimental audit rate is set, subjects may substitute their own "best guess" of the real world audit rate. To control for differences in the subjects' beliefs of the actual audit rate, a subjective audit rate was measured and used as an explanatory variable in the tax reporting choice model.

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[24] After completing the decision frame rating and ranking tasks, subjects may have concluded that the purpose of the study was to study their tax reporting choice. Even if subjects guessed the true purpose of a study after completing the tasks, the researcher succeeded in eliciting the desired responses. However, since in this study the experimental sessions were conducted over 3 days of the week, subjects that completed the tasks on the first day might inform subjects that attended a later experimental session of the true purpose. To further obscure the purpose of the decision frame response tasks, two filler tasks were included in the post-experiment questionnaire. These tasks were similar to the decision frame tasks but instead focused on the subject's withdrawal decision.

The subjective audit rate was measured by asking subjects for their estimate of the probability that Happy Car's tax return would be selected for an audit. The subjective audit rate was measured in the pre-experiment questionnaire. The specific question used to measure the subjective audit rate can be found in question 17 on the pre-experiment questionnaire in Appendix A.

Subjective uncertainty estimate

Even though the researcher intended to hold the uncertainty about the proper tax treatment constant between taxable income components, it was possible that subjects may not have perceived the uncertainty levels as being equal. The tax laws provide a rather broad, inclusive definition of gross income. Because of this, subjects making reporting decisions for income items may not have believed that it was possible for the probability that a cash receipt was not taxable to equal the probability that the receipt was taxable. Differences in aggressive behavior could be found between income and expense reporting decisions due to the impact of the tax structure on the subjects' prior beliefs.[25]

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[25] The responses of both the tax students and tax professionals who participated in the pre-test for selection of the transaction indicated that there was more uncertainty associated with the proper tax treatment of expense items than for income items.

The subjective uncertainty estimate was measured in the pre-experiment questionnaire. The specific question used to measure the subjective uncertainty estimate can be found in question 20 on the pre-experiment questionnaire in Appendix A. Subjects were asked for their estimate of the probability that the government would adopt a particular tax treatment for a cash transaction. Subjects in the income condition were asked for the probability that the IRS would consider a cash receipt tax free. Subjects in the expense condition were asked for the probability that the IRS would consider a cash payment deductible. The question advised all subjects that Happy Car's CPA had determined that the proper tax treatment was very uncertain. To assure that the effect of the taxable income component was not confounded with differences in uncertainty, the subjective uncertainty estimate was included as an explanatory variable in the tax reporting choice model.[26]

Risk attitude as a covariate

While prospect theory predicts different risk preferences depending on whether the decision maker frames the decision outcome as a gain or loss, it is possible that overall risk attitudes bear on the tax reporting decision.[27] A global risk attitude measure was included as a covariate in the tax reporting choice model.

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[26] The pre-experiment questionnaire included seven questions that asked the subjects to estimate the probabilities that certain business-related outcomes would occur. The instructions advised the subjects that each of the outcomes was uncertain and independent of the other outcomes. Two of the seven questions were used to measure the subjective audit rate and subjective uncertainty estimate. The remaining five questions asked subjects to estimate the probabilities of uncertain business-related events that were not related to tax matters. These questions were included on the questionnaire to dilute the attention placed on the tax emphasis in the subjective audit rate and subjective uncertainty estimate questions. Since the questionnaire was administered prior to the study, the inclusion of the five decoy questions was intended to reduce the chances that subjects would suspect that the study was related to tax reporting issues.

[27] The influence of global risk attitudes on decision making, as suggested by expected utility theory, are not consistent with prospect theory because of the latter's emphasis on changes in wealth. See Selto and Cooper (1990) for a discussion of controlling risk attitudes in experimental accounting research.

Prior to the introduction of this study in the first period, the subjects' risk attitudes were measured. The risk propensity measurement from the Jackson Personality Inventory (Jackson 1976) was used to measure risk attitude. This inventory subscale has been previously used in the tax reporting context (Collins et al. 1990). Consistent with Collins et al. (1990), ten of the twenty questions in the risk propensity subscale were included in the pre-experiment questionnaire. The order of the questions was random. Higher scores on this subscale indicate a higher propensity toward accepting risk. The specific questions used to measure risk attitude can be found in questions 5-14 on the pre-experiment questionnaire in Appendix A.

Data Analysis Methods

The discussion in Chapter 3 described both a model of the decision frame and the tax reporting choice. The experimental design discussion described the manipulation of independent variables and the measurement of the dependent variables contained in these two models. In addition, some variables not included in the models in Chapter 3 were introduced in Chapter 4. An order effect was included in the decision frame model. The subjective audit rate, subjective uncertainty estimate, and risk attitude were included in the tax reporting choice model.

The Models

The variables in the decision frame model are as follows:

DF = Decision frame, gain or loss
TIC = Taxable income component, income or expense
TIME = Tax payment timing, current or delayed
ORDER= Order of presentation of gain/loss frames

The decision frame model is estimated as:[28]

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[28] Although no main effects are predicted for TIC and TIME, they were included here for completeness. No other interaction terms were included in the model since no effects are predicted. However, all interaction terms were tested for significance.

$$DF = \alpha_0 + \alpha_1\ TIC + \alpha_2\ TIME + \alpha_3\ ORDER + \alpha_4\ TIC \times TIME + u_1$$

The variables in the tax reporting choice model include the decision frame and the tax structure variables as well as the following:

TRC = Tax reporting choice, conservative or aggressive
SAR = Subjective audit rate
SUE = Subjective uncertainty estimate
RA = Risk attitude

$$TRC = \beta_0 + \beta_1\ DF + \beta_2\ TIC + \beta_3\ TIME + \beta_4\ SAR + \beta_5\ SUE + \beta_6\ RA + u_2$$

Special Considerations in Estimation

The analysis of the decision frame and the tax reporting choice presents concerns that may be atypical of many experimental studies. It is evident that the models of the decision frame and the tax reporting choice are related. The tax structure variables affect the decision frame which affects the tax reporting choice. In addition, the tax structure variables affect the tax reporting choice directly. Since the dependent variable in the first model is used as an independent variable in the second model, the two equations may fit into the realm of simultaneous equations estimation. The appropriate analysis method depends on the relationship between the error terms of the two equations.

Analysis when the error terms of the two models are independent

The simplest case is when the error terms of the two models are independent. In this case, the models are said to be recursive (Maddala 1988, 323). Ordinary least squares can be applied to each equation separately (Maddala 1988, 439). The measured decision frame is used both as a dependent variable in the first model and as a covariate in the second model. The analysis-of-variance (ANOVA) method is appropriate for the first model while the analysis-of-covariance (ANCOVA) method is applied in the second model.

Analysis when the error terms of the two models are not independent

When the error terms of the two equations are not independent, two potential obstacles in obtaining consistent estimates must be addressed. The first issue is the identification problem. If a model is not identified, consistent estimates of the parameters cannot be estimated (Maddala 1988). Estimation is not possible because the resulting estimates represent some linear combination of the parameters in all of the equations. In a set of equations such as the present one, the first model (i.e., the decision frame model) is identified. In general, to guarantee identification of the second model (i.e., the tax reporting choice model), at least one exogenous variable must appear in the first model that is not in the second (Maddala 1988, 298). The identification requirement has been met since the decision frame model includes two variables, the order effect and the interaction between taxable income components and tax payment timing, that do not appear in the tax reporting choice model.

Second, assuming that both models are identified, estimating each model separately by ANOVA is not appropriate. Since the actual decision frame includes the error term from the first model, inclusion of the decision frame as an explanatory variable in the second model produces inconsistent estimates if the error terms of the two equations are not independent. Such inconsistent estimates occur because the error term in the second equation and an explanatory variable, the decision frame, are correlated (Maddala 1988, 294).

The solution to this second problem is the use of a two-stage estimation method (Maddala 1988, 310). In the first stage, the first model is estimated by ANOVA and the predicted values of the decision frame are obtained. In the second stage, the predicted decision frames, rather than the actual decision frames, are used as explanatory variables in the tax reporting choice model. The tax reporting choice model is estimated by ANCOVA. Since the predicted values of the decision frame are by design uncorrelated with the error terms in the first model, the predicted decision frame will be uncorrelated with the error term in the tax reporting choice model. The standard error estimates of the coefficients in the tax reporting choice model must be corrected in recognition of the fact that an estimated variable was included in the model (Maddala 1988, 311).

A test of the exogeneity of the decision frame

In choosing the appropriate analysis method to use in simultaneous equation models, it is necessary to know something about the relationship between the error terms of the two models. Rather than apply a direct test of this relationship, Maddala (1988, 435-443) suggests the use of the Hausman specification test to determine whether or not a variable can be considered to be endogenous or exogenous. Hausman (1978) describes this test as being asymptotically equivalent to a test of the covariance between the error terms of the two equations. If the decision frame variable is found to be exogenous, that is equivalent to saying that the error terms are independent. If the decision frame is found to be endogenous, that implies that the error terms are not independent. The Hausman specification test is described in detail in Chapter 5 and was applied to determine which of the two analysis techniques described above was appropriate.

Predicted Relationships

H1 will be supported by a significant coefficient on the interaction term between taxable income components and tax payment timing (TIC*TIME) in the decision frame model. The pattern of the expected interaction is found in Table 3-4.

H2 will be supported by a significant coefficient on the decision frame (DF) variable in the tax reporting choice model. The coefficient should be positive; a higher value on the decision frame variable means a greater tendency to adopt a loss frame and should produce more aggressive behavior according to the predictions of prospect theory.

H3 will be supported by a significant coefficient on the taxable income component (TIC) variable in the tax reporting choice model. In addition, the significance of the coefficient on the subjective uncertainty estimate (SUE) must be considered. The coefficient on the subjective uncertainty estimate should be positive (i.e., more aggressive behavior as the probability that the IRS will consider the amount tax free or deductible increases). If the subjective uncertainty estimate coefficient is significant but the taxable income component coefficient is not, differences in aggressive behavior between taxable income components observed in actual tax reporting may be due to differences in uncertainty. If the taxable income component coefficient alone is significant, or is significant along with the subjective uncertainty estimate coefficient, that suggests that the type of taxable income component affects the reporting choice other than through the effect of uncertainty.

H4 will be supported by a significant coefficient on the timing (TIME) variable in the tax reporting choice model. Since the delayed (current) timing condition was coded as 1 (0), then the coefficient should be positive (i.e., the tax reporting choice is aggressive if the transaction is temporally separated from the tax filing).

Although not the primary focus of this study, predictions are possible for the coefficients on the subjective audit rate (SAR) and the risk attitude (RA) variables. The coefficient on the subjective audit rate should be negative (i.e., more aggressive behavior with a lower audit probability). The coefficient on the risk attitude should be positive (i.e., more aggressive if more risk seeking).

Summary

The experiment described in this chapter included some unique features that were intended to make the tests of the hypotheses presented in Chapter 3 more meaningful. First, a technique to measure the subjects' decision frames was developed. Such a measurement allows the prediction of a particular decision frame as well as providing the means to test the relationship between the decision frame and the tax reporting choice. Second, subjects were exposed to a real time differential. Although it was not possible to incorporate time differences of the magnitude that exist in the actual tax reporting environment, the present design brings more realism to the task than if all four periods had taken place in a single experimental session. Finally, subjects were given incentives to care about the tax reporting choice.

The data analysis techniques discussed recognize the relationship between the decision frame model and the tax reporting choice model. The analyses presented in Chapter 5 include the appropriate methods given the results of the test of the exogeneity of the decision frame in the tax reporting choice model.

Table 4-1
Summary of Subjects' Demographic Information

Grouping Variable	Number	Percentage
Gender		
Female	78	39.4%
Male	120	60.6
Major		
Accounting	160	80.8%
Economics	3	1.5
Finance	20	10.1
Management	1	.5
Marketing	8	4.0
Other	6	3.0
Classification		
Junior	26	13.1%
Senior	116	58.6
Graduate		
Accounting	43	21.7
M.B.A.	9	4.5
Other	4	2.0
Age		
18-22	138	69.7%
23-27	46	23.2
28-32	7	3.5
Over 32	7	3.5
Full-time job		
Yes	74	37.4%
No	124	62.6

Table 4-2
Summary of Subjects' Tax Information

Grouping Variable	Number	Percentage
Number of tax returns filed		
None	33	16.7%
1-5	114	57.6
6-10	39	19.7
11-15	8	4.0
More than 15	4	2.0
Number of tax courses taken		
None	59	29.8%
1-2	122	61.6
3-4	5	2.5
5-6	12	6.1
Number of accounting courses taken		
None	1	0.5%
1-3	36	18.2
3-6	75	38.0
7-9	48	24.2
9-12	15	7.5
More than 12	23	11.6
Encountered an item in filing own tax return where proper tax treatment was uncertain		
Yes	46	23.2%
No	152	76.8

Pre-experiment	Period 1	Period 2	Period 3	Period 4	Post-experiment
Prior to the introduction of study, subjects completed the pre-experiment questionnaire that measured the risk attitude, subjective audit rate, and subjective uncertainty estimate. Subjects received background information on Happy Car and general instructions for the experiment. Subjects then read "Rules for Earning Tickets" and answered questions about the ticket rules. The experimenter reviewed the subjects' answers and answered any questions subjects had about the study.	Subjects received the cash flow information for Period 1, cash flow computation form, withdrawal form and Rules for Earning Tickets. Subjects computed the total cash flow for Period 1 and made withdrawal decisions for Period 1. Subjects computed the ending balances in the business cash account and withdrawals.	Subjects received the cash flow information for Period 2, cash flow computation form, withdrawal form and Rules for Earning Tickets. Subjects in the delayed timing condition received the taxable income component item in their cash flow information. Subjects computed the total cash flow for Period 2 and made withdrawal decisions for Period 2. Subjects computed the ending balances in the business cash account and withdrawals.	Subjects received the cash flow information for Period 3, cash flow computation form, withdrawal form and Rules for Earning Tickets. Subjects computed the total cash flow for Period 3 and made withdrawal decisions for Period 3. Subjects computed the ending balances in the business cash account and withdrawals.	Subjects received the cash flow information for Period 4, cash flow computation form, withdrawal form, Rules for Earning Tickets, cash flow information for Periods 1-3, and tax return form and instructions. Subjects in the current timing condition received the taxable income component item in their cash flow information. Subjects (1) computed the total cash flow for Period 4 (2) completed the tax return and computed the tax liability (3) made withdrawal decisions for Period 4 and (4) computed ending balances in the business cash account and withdrawals.	Immediately after returning the Period 4 tasks to experimenter, subjects completed post-experiment questionnaire that measured the strength of preference for the tax reporting choice as well as the decision frame. The week following Period 4, subjects picked up their lottery tickets and entered them into the drawing container. Two weeks following Period 4, the drawing was held. Winning numbers were posted. Winners had approximately two weeks to claim their prizes following the drawing.

Figure 4-1
Time Line Diagram of Experimental Design

CHAPTER 5
RESEARCH RESULTS

Introduction

The results of tests of the hypotheses developed in Chapter 3 are described in this chapter. First, some descriptive data on the observed values of measured variables are discussed. Second, the results relating to the decision frame model are presented. Next, the results for the tax reporting choice model are discussed. This section includes tests of the exogeneity of the decision frame variable in the tax reporting choice model. Following the results for the tax reporting choice model, a joint test of the hypotheses concerning the decision frame and tax reporting choice models is presented. Chapter 5 concludes with a discussion of the results.

Descriptive Data

Before the main results are discussed in this chapter, descriptive data on the observed values of the variables included in the decision frame and tax reporting choice models are presented. Table 5-1 provides descriptive data for both dependent and independent variables.

As explained in Chapter 4, two types of decision frame measures were collected: rating (RATE) and ranking (RANK).[1] For all decision frame measures except DFRATE3 and DFRANK3, the mean decision frames measured were negative (representing gain frames) although the strength of the frames varied across the measures. The strongest decision frames were DFRATE and DFRANK; since these are the sum of three other measures, the strength of these measures actually reflects the strength of the DFRATE2 and DFRANK2 measures.

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[1] As seen from Table 5-1, the mean decision frames for the two types of measures (i.e., rating and ranking) are very similar. The results for the decision frame and tax reporting choice models using the ranking measures are reported in footnote fashion for two reasons. First, 30 subjects did not correctly complete the ranking task. The most common mistake was that the same rank was used for more than one decision frame statement. Second, the rating measure provides more variability in subjects' responses.

Approximately 67% (133/198) of the subjects chose aggressive reporting behavior. The mean preference for aggressive behavior was 4.4 on a 7-point scale (where higher responses correspond to a stronger preference for aggressive behavior).

The average subjective audit rate (SAR) was 26.4%. As expected, the average SAR for subjects that had been exposed to more information about the IRS through tax courses was significantly lower (p-value=.0042) than the average for subjects that had not taken a tax course.

The average subjective uncertainty estimate (SUE) was 39%. The average subjective uncertainty estimate for subjects in the income condition was significantly lower (p-value=.0001) than the estimate for the subjects in the expense condition. The measurement of this item was based on subjects' responses to a question concerning the chances that the IRS would agree that a receipt (payment) was tax free (deductible). Since the greatest degree of uncertainty exists when SUE is 50%, a mean SUE of 49.6% for expense subjects confirms that these subjects perceived the proper tax treatment of the expense item as highly uncertain.

The average score on the risk attitude (RA) measure was 5.5 (of a possible 10, where higher scores indicate a greater preference for risk taking). Male subjects exhibited a significantly greater preference for risk than did female subjects (p-value=.0001).

The average amount of total withdrawals was $56,072. The mean withdrawal for the first period was the lowest while the mean withdrawal for the last period was the highest. An ANOVA that tested for the effect of the four periods as a within-subjects factor and the effects of TIC and TIME as between-subjects factors was performed on the withdrawals from the four periods. There were no significant main effects or interactions for either the within- or between-subjects factors.

Several questions were included in the debriefing questionnaire to gain insight into how subjects made the tax reporting decision in the experiment and how they might make a similar decision in a real taxpaying setting. The means for these questions are reported in Appendix B. Tests for differences in means between meaningful groups are also reported.

Results for the Decision Frame Model

Review of the Hypothesis

Before discussing the results, it may be useful to restate the hypothesis predicting the effects that the tax structure variables are expected to have on the decision frame.

> H1: Individuals making reporting choices for income items when reporting is current (delayed) will adopt gain (loss) frames. Individuals making reporting choices for expense items when reporting is current (delayed) will adopt loss (gain) frames.

As described in Chapter 4, negative values for the measured decision frame variables represent gains while positive values indicate loss frames. As such, subjects in the income current and expense delayed conditions should be more likely to have negative decision frame measures; subjects in the expense current and income delayed conditions should be more likely to have positive decision frame measures. The predicted effect represents an interaction between the taxable income component and tax payment timing treatments.

The Effect of Between-Subjects Factors on the Decision Frame Measures

The results for the decision frame model will be presented in the next section. However, before the primary analyses were performed, the three primary decision frame measures, DFRATE1, DFRATE2, and DFRATE3, were examined to determine whether the effect of the between-subjects factors (TIC, TIME, and ORDER) varied depending on the measurement of the decision frame. As explained in Chapter 4, each of these three measures is intended to capture the relative strength of the subjects' adoption of gain and loss frames. The three measures differ only in the outcomes described in the questions used to measure the three decision frame variables. In the measurement of DFRATE1, the outcomes described the conservative reporting of the taxable income component item. In the measurement of DFRATE2, the outcomes described the aggressive reporting of the taxable income component without a subsequent audit adjustment. In the measurement of DFRATE3, the outcomes described were similar to those in DFRATE2 except an audit adjustment was assumed.

The purpose of this test was to determine if the outcome factor (via the three decision frame measures) interacted with the between-subjects factors. If any interactions of the outcome factor with the between-subjects variables are significant, an analysis of the effects of the between-subjects factors on the sum of the three decision frame measures, DFRATE, may not be as meaningful as separate analyses of each decision frame measure. An ANOVA was performed on the decision frame measures treating outcome (i.e., conservative reporting; aggressive reporting, no audit adjustment; aggressive reporting with audit adjustment) as a within-subjects factor. The manipulated variables, TIC, TIME, and ORDER, were included as between-subjects factors.

The results for the within-subjects factors are reported in Table 5-2. Outcome is highly significant (p-value=.0001), suggesting that subjects did not respond to the three outcomes in the same manner. As shown in Table 5-1, the means for DFRATE1 and DFRATE2 were negative (gain frames) while the DFRATE3 mean was positive (a loss frame). The only other term that is marginally significant is the Outcome*TIC*TIME interaction (p-value=.1157). Since the TIC*TIME interaction is the predicted determinant of the decision frame, a marginally significant interaction between the outcome variable and the TIC*TIME interaction means that the detection of an effect of the TIC*TIME interaction may be dependent on the particular decision frame measure. The remainder of Chapter 5 will report results for the decision frame and tax reporting choice models separately for DFRATE, DFRATE1, DFRATE2, and DFRATE3.[2]

Hypothesis Test

Table 5-3 presents the ANOVA results for the decision frame model using the DFRATE decision frame measure. The TIC*TIME interaction predicted by H1 is not significant (p-value=.2358). The only factor that is significant is TIC (p-value=.0001). The mean DFRATE for the income group was 1.020, indicating that these subjects responded more strongly to loss frames than to gain frames. For income items, loss frames result from segregation. The mean DFRATE for the expense group was -4.366, indicating that these subjects responded more strongly to gain frames than to loss frames. For expense items, gain frames result from segregation. Although the main effect for TIC was not predicted, the interpretation of the TIC effect is that all subjects responded more strongly to decision frames that segregated the tax consequences from the taxable income component item than to decision frames where the tax consequences were integrated with the item. In addition, the segregation effect was stronger for expense subjects. The order that the gain and loss frames were presented to subjects in the experimental materials, the ORDER treatment, was not significant.[3]

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[2] The same analysis was performed on the three decision frame ranking variables, DFRANK1, DFRANK2, and DFRANK3. Once again, the within-subjects factor, outcome, was significant (p-value=.0001). In addition, the Outcome*TIME interaction was marginally significant (p-value=.0825). Because of the significant interaction, separate analyses were performed for DFRANK1, DFRANK2, and DFRANK3 in addition to the sum, DFRANK.

[3] The results for the DFRANK variable were similar to those for DFRATE. Only TIC was significant (p-value=.0001).

The ANOVA results for the decision frame model using the DFRATE1 decision frame measure are presented in Table 5-4. The results are similar to those for DFRATE.[4]

Table 5-5 contains the ANOVA table for the decision frame model for the DFRATE2 decision frame measure. Again, the main effect of TIC is significant although the means for both income and expense groups are negative (p-value=.0001). In addition, the TIC*TIME interaction is marginally significant (p-value=.0307) as predicted by H1.[5] Panel B in Table 5-5 reports the results of simple effects tests for the effect of TIME at each level of TIC. For subjects in the income condition, the effect of TIME was significant (p-value=.0650). While the average frame for income delayed subjects was negative, the mean decision frame responses are in the predicted direction. Income subjects in the current condition responded more strongly to gain frames than did income subjects in the delayed condition. For subjects in the expense condition, the effect of TIME was not significant (p-value=.1275). Again, the means for both current and delayed subjects were negative but the pattern of means is as predicted by H1. When the decision frame was measured using DFRATE2, the results of the simple effects tests indicate that the predicted differences in decision frames due to the effect of TIME are present for income items but not for expense items.

The results of the analysis of DFRATE3 are reported in Table 5-6. Again, TIC is highly significant (p-value=.0001). Neither the TIC*TIME interaction or ORDER is significant.[6]

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[4] The results for DFRANK1 were similar to those for DFRATE1; only TIC was significant (p-value=.0014). The pattern of cell means was the same.

[5] When the decision frame was measured using DFRANK2, only TIC was significant (p-value=.0002) in the decision frame model.

[6] When the decision frame was measured using DFRANK3, TIC was significant (p-value=.0001). In addition, the TIC*ORDER interaction was marginally significant (p-value=.1061).

Results for the Tax Reporting Choice Model

Review of the Hypotheses

Again, the hypotheses presented in Chapter 3 are restated.

> H2: Individuals adopting gain frames will be more likely to choose conservative tax reporting while individuals adopting loss frames will be more likely choose aggressive tax reporting.

As discussed in Chapter 4, H2 will be supported by a significant, positive coefficient on the decision frame variable. Since loss frames are represented by positive decision frame measures, higher values on the decision frame measures should be associated with a greater preference for aggressive tax reporting.

> H3: Individuals making tax reporting choices for income items will differ in the aggressiveness of their choices from individuals making tax reporting choices for expense items.

As discussed in Chapter 4, H3 will be supported by a significant coefficient on the taxable income component variable. No prediction is made about the sign of the coefficient because the empirical evidence that supports this hypothesis is inconclusive. The interpretation of the meaning of a significant coefficient must also consider the significance of the subjective uncertainty estimate variable.

> H4: Tax reporting decisions for initial transactions that are temporally separated from the tax filing (delayed reporting) will be more aggressive than tax reporting decisions made for transactions that are more closely related in time to the tax filing (current reporting).

As discussed in Chapter 4, H4 will be supported by a significant, positive coefficient on the timing variable. Such a result would be consistent with the timing interpretation of payment/refund studies that found that taxpayers with payments due were more aggressive than those receiving refunds.

While not the primary focus of the study, predictions are also possible for the coefficients on subjective audit rate and the risk attitude. The coefficient on the subjective audit rate should be negative; preferences for aggressive tax reporting decrease as the probability of an audit increases. The coefficient on the risk attitude should be positive; preferences for aggressive tax reporting increase as the individual's preference for general risk taking increases.

Tests of the Exogeneity of the Decision Frame

Before the analyses are presented for the tax reporting choice model, the results of tests of the exogeneity of the decision frame in the tax reporting choice model are described. As discussed in Chapter 4, the appropriate analysis method for the tax reporting choice model depends on whether the error terms of the decision frame and tax reporting choice models are independent. The relationship between the error terms can be characterized based on the results of Hausman's specification error test (Maddala 1988, 435-439). Hausman's test does not test the independence of the error terms directly; however, in simultaneous equation settings the test has an equivalent interpretation (Hausman 1978). The null hypothesis is that the dependent variable from the first model and the error term in the second model are independent. If so, the dependent variable from the first model (i.e., the decision frame) can be treated as an exogenous variable in estimating the second model (i.e., the tax reporting choice model). If the decision frame variable can be treated as an exogenous variable, the tax reporting choice model is analyzed using the regular ANCOVA method. If the decision frame variable cannot be treated as an exogenous variable, the tax reporting choice model is analyzed using a two-stage ANCOVA method where the predicted value of the decision frame rather than the actual value is included as an explanatory variable in the tax reporting choice model.

The test statistic, m, is chi-squared with 1 d.f. and is calculated as follows.

$$m = \frac{\hat{q}^2 r^2}{(1-r^2)\hat{V}_o}$$

where

$\hat{q} = \beta - \bar{\beta}$
where $\hat{\beta}$ = OLS estimate
$\bar{\beta}$ = 2-stage estimate
r^2 = squared correlation of x, $\hat{x}$
$\hat{V}_o = \mathrm{Var}(\bar{\beta})$

The OLS estimate is the coefficient on the actual decision frame from the tax reporting choice model while the 2-stage estimate is the coefficient on the predicted decision frame from the tax reporting choice model. The squared correlation between the actual and predicted values of the decision frame (the x above) is the R^2 from the decision frame model. The calculated m statistics for the decision frame measures are reported in Table 5-7. The null hypothesis can only be rejected for DFRATE3; the tax reporting choice model using DFRATE3 as the decision frame measure was estimated by ANCOVA using a two-stage method where the predicted value of DFRATE3 was included in the tax reporting choice model. The tax reporting choice models using DFRATE, DFRATE1, and DFRATE2 as the decision frame were estimated by the ANCOVA method using the actual decision frame.[7]

Hypothesis Tests When Decision Frame is Treated as Exogenous Variable

The tax reporting choice models discussed here are those that include DFRATE, DFRATE1, and DFRATE2 as explanatory variables. In all of the tax reporting choice models reported in this section, the dependent variable is the preference for aggressive behavior. Although a dichotomous variable representing aggressive behavior was available, the variability present in a strength of preference measure was desirable.

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[7] When the test statistic m was calculated using the ranking variables (DFRANK, DFRANK1, DFRANK2, and DFRANK3), only the statistic for DFRANK1 was significant (p-value=.10). When the ranking variables are used to measure the decision frame, the decision frame can be treated as exogenous for DFRANK, DFRANK2, and DFRANK3. When the decision frame is measured as DFRANK1, the two-stage method was used.

The ANCOVA results for the tax reporting choice model with DFRATE as the decision frame are reported in Table 5-8. H2 is not supported; the coefficient on the DFRATE variable is not significant. The TIC factor is significant (p-value=.0023) as predicted by H3. The means reported in Panel B indicate that preferences for aggressive behavior were stronger for expense items than for income items. As explained in Chapter 4, the interpretation of the effect of TIC is dependent on the results for SUE. SUE was significant as well (p-value=.0743) with a positive coefficient. As reported in Table 5-1, SUE was significantly greater for expense items than for income items. Since TIC was significant in addition to SUE, it appears that TIC affects tax reporting behavior in ways other than creating differences in uncertainty. Contrary to the predictions of H4, the TIME factor was not significant. Although not the primary focus of the study, the coefficients on SAR and RA were significant (p-values=.0596 and .0058, respectively) and had the predicted signs.[8]

The ANCOVA results for the tax reporting choice model when the decision frame was measured using DFRATE1 are presented in Table 5-9. As predicted by H2, the coefficient on the DFRATE1 variable is marginally significant (p-value=.0903) and positive (loss decision frames are associated with more aggressive behavior). H3 is supported as both TIC and SUE are significant (p-values=.0002 and .0536, respectively). Again, H4 is not supported; TIME is not significant.

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[8] The results for the tax reporting choice model when the decision frame was measured with DFRANK were almost identical to those reported in Table 5-8 for DFRATE.

Also, SAR and RA are significant as in the previous model (p-values=.0561 and .0071, respectively).[9]

The ANCOVA results for the tax reporting choice model when the decision frame is measured using DFRATE2 are presented in Table 5-10. Although this particular decision frame measure was the one in which the predicted TIC*TIME interaction was significant in the decision frame model, the DFRATE2 is not significant in the tax reporting choice model. The results for all other variables are similar to those obtained when the DFRATE measurement was used.[10]

Hypothesis Tests When Decision Frame is Treated as Endogenous Variable

The results for the tax reporting choice model when the predicted value of DFRATE3 is included are reported in Table 5-11. The coefficient on the DFRATE3 variable is not significant. The TIC coefficient is significant, although less so than in the other models

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[9] The results for the tax reporting choice model when DFRANK1 was used to measure the decision frame are somewhat different from those for DFRATE1. Based on the results of the Hausman specification error test, the predicted (rather than actual) value of DFRANK1 was included in the tax reporting choice model. Since TIC was so significant in the decision frame model of DFRANK1, inclusion of both TIC and the predicted DFRANK1 variable in the tax reporting choice model results in insignificant coefficients on both variables. The lack of significance appears to be due to multicollinearity. The results for the other variables in the tax reporting choice model are similar to those when DFRATE1 is included. Since the m statistic for DFRANK1 was significant at the .10 level but not at the .05 level, treating DFRANK1 as an exogenous variable may be justified. When the actual DFRANK1 was included in the tax reporting choice model instead of the predicted value, the results are similar to those obtained when DFRATE1 is included. However, the significance level of the decision frame variable is much greater (p-value=.0258). Multicollinearity is not a problem when the actual DFRANK1 variable is used because of the size of the unexplained variance in the decision frame model. Although TIC was highly significant in the decision frame model, the correlation between TIC and the actual DFRANK1 is much smaller than the correlation between TIC and the predicted DFRANK1.

[10] The results for the tax reporting choice model using DFRANK2 are almost identical to those reported in Table 5-10 for DFRATE2.

(p-value=.10). The results for SUE, SAR and RA are similar to those reported above.[11]

A Test of the Joint Hypothesis, H1 and H2

As discussed in Chapter 2, prior tax reporting research on the effects of framing tested the joint hypothesis that (1) the intended decision frame was adopted and (2) the predictions of prospect theory concerning decision frames were supported. If the predicted results were not found, this approach makes it impossible to determine whether (1) the intended decision frame was not adopted or (2) the frame did not affect the choice as predicted. This study's measurement of the decision frame extends prior research, however the decision frame measurement technique is not perfect. Errors in decision frame measurement could affect the results. Although the tests of H1 and H2 reported above indicate weak support for the two hypotheses, the significance of the results is dependent on the specific decision frame measure used. If H1 and H2 jointly hold but the effects are blocked by decision frame measurement error, the TIC*TIME interaction should be significant in the tax reporting choice model. The pattern of expected results can be found in Chapter 3 in Table 3-2.[12] Finding a significant interaction would suggest that both H1 and H2 hold but that measurement error prevents the detection of significant effects when the decision frame variable is used. This type of analysis is similar to previous tax reporting framing studies where no measurement or direct test of the decision frame was performed; the predicted frame was assumed to have been adopted and the pattern of tax reporting behavior was expected to be consistent with the predictions of prospect theory.

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[11] The results for the tax reporting choice model using DFRANK3 differ somewhat from the results reported in Table 5-11 for DFRATE3. The m statistic for the DFRANK3 measurement suggests that DFRANK3 can be treated as an exogenous variable in the tax reporting choice model while DFRATE3 was treated as an endogenous variable. The significance levels of TIC, SAR, SUE, and RA are similar to those reported in Table 5-11 although TIC is more significant (p-value=.0073). The coefficient on DFRANK3 is also significant (p-value=.0157) but is negative instead of positive.

[12] In Table 3-2, the cells under the integration heading represent the current condition while those under the segregation heading are the delayed condition.

The tax reporting choice model was analyzed replacing the decision frame variable with the TIC*TIME interaction. The ANCOVA results are reported in Table 5-12. The interaction was not significant. To further test for the predicted effect of the interaction, the tax reporting choice was modelled as a dichotomous variable and the probit method was applied. The probit results are reported in Table 5-13. Again, the interaction was not significant. However, the pattern of aggressive behavior is consistent with that described in Table 3-2.

Discussion of the Results

The purpose of this study was to examine the effects of fundamental aspects of the tax structure on tax reporting choices. Both indirect and direct effects were predicted for the tax structure variables examined: taxable income components and tax payment timing. The tax structure variables were predicted to indirectly affect tax reporting choices through the decision frame. In addition, the tax structure variables were expected to affect the tax reporting choice directly. Hypotheses were developed that predicted (1) an effect of the tax structure variables on the decision frame adopted; (2) an effect of the decision frame on the tax reporting choice; (3) an effect of the type of taxable income component on the tax reporting choice; and (4) an effect of the tax payment timing on the tax reporting choice. The first two hypotheses relate to the indirect effect; the last two relate to the direct effects.

The Indirect Effect of the Tax Structure Variables

Decision frames adopted by individuals making tax reporting choices were predicted to be affected by the type of taxable income component item and the tax payment timing. This prediction was founded on the concepts of integration and segregation from the theory of mental accounting (Thaler 1985). Specifically, an interaction between taxable income components and tax payment timing was predicted in the decision frame model. Subjects in the income current (delayed) condition were predicted to adopt gain (loss) frames; subjects in the expense current (delayed) condition were predicted to adopt loss (gain) frames.

The predicted interaction was marginally significant in the decision frame model only when the DFRATE2 decision frame measure was used. For subjects in the income condition, the effect of tax payment timing was significant and in the predicted direction. Income subjects in the current condition responded more strongly to gain frames than did subjects in the delayed condition. For subjects in the expense condition, the effect of tax payment timing was in the direction predicted but was not significant. The interpretation of these results is that integration of taxes on an income item is more likely to occur when the tax payment is made soon after the income is received than when the tax payment is temporally separated from the income receipt. Such results are consistent with the effect that temporal distance has on an individual's tendency to integrate and segregate multiple outcomes from previous research (Thaler 1985; Thaler and Johnson 1990; Linville and Fischer 1991).

The decision frame, in turn, was predicted to affect the tax reporting choice. Based on the predictions of prospect theory subjects adopting loss frames were expected prefer more aggressive tax reporting behavior; subjects adopting gain frames were expected to prefer more conservative behavior. This prediction was marginally supported when the DFRATE1 decision frame measure was used. The positive coefficient on the decision frame confirms prospect theory's predictions of increasing preferences for risky behavior when loss frames are adopted. The predicted effect was even stronger when the DFRANK1 measure was treated as an exogenous variable in the tax reporting choice model.

Because of possible decision frame measurement error, a joint test of these two hypotheses was conducted. This approach was similar to the methodology used in prior framing research where the decision frame was not explicitly measured. Instead, the pattern of tax reporting choices was examined to see it matched predicted choices assuming that the expected decision frames were adopted. The joint test predicted (1) that the tax structure variables produce decision frames in accordance with mental accounting theory's integration and segregation concepts and (2) that the resulting decision frames affect tax reporting choices in accordance with prospect theory's predictions. The predictions of the joint hypothesis were not supported.

Although the results did not support the joint hypothesis, the test was useful for comparison with prior tax reporting studies employing the framing paradigm. While support for the first two hypotheses when tested separately may be characterized as weak, there was no support for the joint test of the two hypotheses. Such a seemingly inconsistent result is because the results for the first two hypotheses are highly dependent on the particular decision frame measure used. The first hypothesis was supported by the DFRATE2 measure; the second was supported by the DFRATE1 measure. Admittedly, the appropriate technique to measure decision frames is uncertain. However, the attempt to measure decision frames made in this study provides at least weak support for two separate hypotheses. The alternative test of the joint hypothesis that is performed by default when the decision frame is not measured provided no support for the ideas developed in this study.

The Direct Effects of Tax Structure Variables

Direct effects of the tax structure variables on the tax reporting choices were also predicted. The type of taxable income component was expected to affect tax reporting choices. Based on IRS empirical evidence, differences in aggressiveness between income and expense items were expected. Differences in aggressiveness between income and expense items were also present in this experimental study. Subjects in the expense condition preferred more aggressive behavior than those in the income condition. The significance of the subjective uncertainty estimate variable in addition to the taxable income component variable suggests that differences in aggressive behavior due to the type of taxable income component were not attributable solely to differences in uncertainty. The positive coefficient on the subjective uncertainty estimate variable indicates that as uncertainty increases, preferences for aggressive behavior increase. The average subjective uncertainty estimate for expense subjects was approximately 50%, suggesting that expense subjects characterized the proper tax treatment of the taxable income component item as having the maximum uncertainty possible.

The literature reviewed in Chapter 2 indicated that income and expense items differed on several attributes (e.g., opportunity, fairness, complexity) that have been linked to taxpayer behavior. Differential tax reporting behavior in actual tax filings for income and expense items could be explained by varying levels of these attributes. However, the results of this study indicated that when the proper tax treatment of an item was uncertain, more aggressive tax reporting behavior was preferred for expense items than for income items even when levels of other attributes were held constant. Several measures were included in the experiment to maintain equal levels of other attributes for income and expense items. First, the same transaction was used for income and expense subjects. Attributes such as fairness and complexity should have been constant for all subjects. Next, the opportunity for aggressive behavior was the same for all subjects. Finally, by measuring the subjective uncertainty estimate and including it in the tax reporting choice model, the effect of uncertainty on tax reporting choices was measured directly.

Tax reporting choices were also predicted to be directly related to tax payment timing. Based on a timing interpretation of results of payment/refund studies, subjects in the delayed condition were expected to have a greater preference for aggressive behavior than those in the current condition. The tax payment timing effect was not found in any of the tax reporting choice models.

Other Results

Although not predicted, for all measures of decision frame, the taxable income component variable was highly significant in the decision frame model. For the DFRATE, DFRATE1, and DFRATE3 decision frame measures, the means for subjects in the income condition represented stronger responses to loss frames while the means for subjects in the expense condition indicated stronger responses to gain frames. For these three decision frame measures, the interpretation is that all subjects responded more strongly to decision frames where the tax consequences were segregated from the taxable income component item. In the DFRATE2 decision frame model, the means for both income and expense subjects indicated stronger responses to gain frames but the effect was larger for expense subjects. The interpretation of this result for the DFRATE2 measure is that income subjects responded more strongly to decision frames resulting from the integration of the tax consequences with the income item while expense subjects responded more strongly to decision frames resulting from segregation. The ORDER treatment was not significant in any of the decision frame models.

While the effect of the type of taxable income component on the tax reporting choice was highly significant, the effect of risk attitudes was almost equally significant. Subjects scoring higher on the risk attitude measure preferred more aggressive behavior.

The subjective audit rate was also consistently significant in the tax reporting choice model. As the subjects' perceptions of the risk of audit increased, the preference for aggressive behavior decreased.

Summary

The predictions for the indirect effect of taxable income components and tax payment timing on tax reporting choices were weakly supported. Predictions of differences in aggressiveness related to the type of taxable income component were strongly supported. The predicted relationship between tax payment timing and tax reporting choices was not supported. Contributions and implications of the results of this study are discussed in Chapter 6.

Table 5-1
Descriptive Data

Variable Name	Mean
Decision frame:	
DFRATE	-1.62
DFRATE1	-0.32
DFRATE2	-1.43
DFRATE3	0.14
DFRANK	-1.41
DFRANK1	-0.35
DFRANK2	-1.16
DFRANK3	0.09
Tax reporting choice:	
Percentage of subjects choosing aggressive behavior	67.0%
Strength of preference for aggressive behavior (out of 7)	4.4
Subjective audit rate (SAR)	26.4%
Subjects having at least 1 tax course (n=139)	23.6%
Subjects having no tax courses (n=59)	32.9%
Subjective uncertainty estimate (SUE)	39.0%
Subjects in the income condition (n=101)	28.9%
Subjects in the expense condition (n=97)	49.6%
Risk attitude measure (RA)	5.5
Males (n=120)	6.3
Females (n=78)	4.3
Withdrawals:	
Period 1	$12,386
Period 2	14,438
Period 3	14,036
Period 4	15,212
Total	56,072

Note: The number of subjects' responses included in the means for all variables is 198 unless otherwise stated except for the decision frame ranking variables. Thirty subjects did not provide usable responses in the ranking task; responses for 168 subjects are included.

Table 5-2
Examination of the Effect of Between-Subjects Variables on the Decision Frame Measures

Sources[a]	DF	SS	F	Pr > F
Within-subject				
Outcome	2	255.548	25.68	.0001
Outcome*TIC	2	11.208	1.13	.3254
Outcome*TIME	2	16.410	1.65	.1937
Outcome*ORDER	2	5.076	0.51	.6009
Outcome*TIC*TIME	2	21.585	2.17	.1157
Outcome*TIC*ORDER	2	2.048	0.21	.8141
Outcome*TIME*ORDER	2	12.502	1.26	.2859
Outcome*TIC*TIME *ORDER	2	5.247	0.53	.5907
Error	380	1890.999		

[a] Outcome = Outcome described in the decision frame measures
TIC = Taxable income components
TIME = Tax payment timing
ORDER = Order of gain and loss frames in experimental materials

Table 5-3
Decision Frame Model
Using DFRATE[a] as the Decision Frame

Panel A:ANOVA Results
R^2=.2093

Sources[b]	DF	SS	F	Pr > F
TIC	1	1393.332	46.45	.0001
TIME	1	1.452	0.05	.8261
ORDER	1	32.734	1.09	.2975
TIC*TIME	1	15.606	0.52	.2358[c]
TIC*ORDER	1	0.082	0.00	.9585
TIME*ORDER	1	4.734	0.16	.6916
TIC*TIME*ORDER	1	21.538	0.72	.3979
Error	190	5699.461		

Panel B:Cell Means

	Current	Delayed	Overall
Income	.633 (n=49)	1.385 (n=52)	1.020 (n=101)
Expense	-4.189 (n=45)	-4.519 (n=52)	-4.366 (n=97)

[a] DFRATE is the sum of the three decision frame measurements, DFRATE1, DFRATE2, and DFRATE3.

[b] TIC = Taxable income components
TIME = Tax payment timing
ORDER = Order of gain and loss frames in experimental materials

[c] Because the TIC*TIME interaction is a 1 d.f. contrast, it is equivalent to a t-test. Since the direction of the effect of the interaction is predicted in H1, the p-value reported corresponds to that of a one-tailed t-test.

Table 5-4
Decision Frame Model
Using DFRATE1[a] as the Decision Frame

Panel A:ANOVA Results
R^2=.1523

Sources[b]	DF	SS	F	Pr > F
TIC	1	223.162	30.70	.0001
TIME	1	10.144	1.40	.2390
ORDER	1	2.271	0.31	.5768
TIC*TIME	1	0.393	0.05	.4082[c]
TIC*ORDER	1	1.131	0.16	.6937
TIME*ORDER	1	8.929	1.23	.2691
TIC*TIME*ORDER	1	0.015	0.00	.9639
Error	190	1381.224		

Panel B:Cell Means

	Current	Delayed	Overall
Income	.449 (n=49)	.981 (n=52)	.723 (n=101)
Expense	-1.622 (n=45)	-1.231 (n=52)	-1.412 (n=97)

[a] The outcome assumed in DFRATE1 was conservative reporting.

[b] TIC = Taxable income components
TIME = Tax payment timing
ORDER = Order of gain and loss frames in experimental materials

[c] Because the TIC*TIME interaction is a 1 d.f. contrast, it is equivalent to a t-test. Since the direction of the effect of the interaction is predicted in H1, the p-value reported corresponds to that of a one-tailed t-test.

Table 5-5
Decision Frame Model
Using DFRATE2[a] as the Decision Frame

Panel A:ANOVA Results
R^2=.1088

Sources[b]	DF	SS	F	Pr > F
TIC	1	104.641	15.50	.0001
TIME	1	0.311	0.05	.8303
ORDER	1	13.411	1.99	.1603
TIC*TIME	1	23.932	3.54	.0307[c]
TIC*ORDER	1	0.031	0.00	.9456
TIME*ORDER	1	3.837	0.57	.4519
TIC*TIME*ORDER	1	1.464	0.22	.6419
Error	190	1282.700		

Panel B:ANOVA Results
for each TIC type

Sources	DF	SS	F	Pr > F
Income only				
TIME	1	15.200	2.33	.0650[c]
Error	97	631.872		
Expense only				
TIME	1	9.182	1.31	.1275[c]
Error	93	650.828		

Panel C:Cell Means

	Current	Delayed	Overall
Income	-1.102 (n=49)	-0.308 (n=52)	-0.693 (n=101)
Expense	-1.878 (n=45)	-2.481 (n=52)	-2.201 (n=97)

[a] The outcome assumed in DFRATE2 was aggressive reporting, no audit adjustment.

[b] TIC = Taxable income components
TIME = Tax payment timing
ORDER = Order of gain and loss frames in experimental materials

[c] Because the TIC*TIME interaction is a 1 d.f. contrast, it is equivalent to a t-test. Since the direction of the effect of the interaction is predicted in H1, the p-value reported corresponds to that of a one-tailed t-test.

Table 5-6
Decision Frame Model
Using DFRATE3[a] as the Decision Frame

Panel A:ANOVA Results
R^2=.1328

Sources[b]	DF	SS	F	Pr > F
TIC	1	147.850	24.93	.0001
TIME	1	6.439	1.09	.2987
ORDER	1	0.305	0.05	.8209
TIC*TIME	1	2.461	0.42	.2601[c]
TIC*ORDER	1	0.913	0.15	.6953
TIME*ORDER	1	1.314	0.22	.6384
TIC*TIME*ORDER	1	10.947	1.85	.1759
Error	190	1126.773		

Panel B:Cell Means

	Current	Delayed	Overall
Income	1.286 (n=49)	0.712 (n=52)	0.990 (n=101)
Expense	-0.689 (n=45)	-0.808 (n=52)	-0.753 (n=97)

[a] The outcome assumed in DFRATE3 was aggressive reporting, audit adjustment.

[b] TIC = Taxable income components
TIME = Tax payment timing
ORDER = Order of gain and loss frames in experimental materials

[c] Because the TIC*TIME interaction is a 1 d.f. contrast, it is equivalent to a t-test. Since the direction of the effect of the interaction is predicted in H1, the p-value reported corresponds to that of a one-tailed t-test.

Table 5-7
Results of Hausman's
Specification Error Test

Decision Frame Measure	m
DFRATE	2.239
DFRATE1	0.712
DFRATE2	0.004
DFRATE3	4.969

Chi-squared with 1 $d.f._{.90} = 2.71$
Chi-squared with 1 $d.f._{.95} = 3.84$

Table 5-8
Tax Reporting Choice Model
Using the Actual DFRATE[a]
as the Decision Frame

Panel A:ANCOVA Results
R^2=.1495

Sources[b]	DF	SS	F	Pr > F
DFRATE	1	0.902	0.34	.2814[c]
TIC	1	25.746	9.59	.0023
TIME	1	0.098	0.04	.4243[c]
SAR	1	6.577	2.45	.0596[c]
SUE	1	5.646	2.10	.0743[c]
RA	1	17.492	6.52	.0058[c]
Error	191	512.733		

Panel B:Cell Means

Income	4.012 (n=101)
Expense	4.892 (n=97)

Panel C:Estimated Coefficients

DFRATE	-0.013
SAR	-0.009
SUE	0.008
RA	0.116

[a] DFRATE is the sum of the three decision frame measurements, DFRATE1, DFRATE2, and DFRATE3.

[b] DFRATE = Decision frame
TIC = Taxable income components
TIME = Tax payment timing
SAR = Subjective audit rate
SUE = Subjective uncertainty estimate
RA = Risk attitude

[c] Since a prediction was made about the direction of the effect of a factor, the p-values reported here are one-half of that normally reported for an F test and correspond to a one-tailed t test.

Table 5-9
Tax Reporting Choice Model
Using the Actual DFRATE1[a]
as the Decision Frame

Panel A:ANCOVA Results
R^2=.1560

Sources[b]	DF	SS	F	Pr > F
DFRATE1	1	4.811	1.81	.0903[c]
TIC	1	38.792	14.56	.0002
TIME	1	0.011	0.00	.4741[c]
SAR	1	6.788	2.55	.0561[c]
SUE	1	6.980	2.62	.0536[c]
RA	1	16.356	6.14	.0071[c]
Error	191	508.824		

Panel B:Cell Means

Income	3.928 (n=101)
Expense	4.981 (n=97)

Panel C:Estimated Coefficients

DFRATE1	0.059
SAR	-0.009
SUE	0.009
RA	0.113

[a] The outcome assumed in DFRATE1 was conservative reporting.

[b] DFRATE1 = Decision frame
TIC = Taxable income components
TIME = Tax payment timing
SAR = Subjective audit rate
SUE = Subjective uncertainty estimate
RA = Risk attitude

[c] Since a prediction was made about the direction of the effect of a factor, the p-values reported here are one-half of that normally reported for an F test and correspond to a one-tailed t test.

Table 5-10
Tax Reporting Choice Model
Using the Actual DFRATE2[a]
as the Decision Frame

Panel A:ANCOVA Results
R^2=.1501

Sources[b]	DF	SS	F	Pr > F
DFRATE2	1	1.257	0.47	.2473[c]
TIC	1	29.960	11.17	.0010
TIME	1	0.092	0.03	.4267[c]
SAR	1	6.501	2.42	.0606[c]
SUE	1	5.415	2.02	.0785[c]
RA	1	16.341	6.09	.0073[c]
Error	191	512.378		

Panel B:Cell Means

Income	4.002 (n=101)
Expense	4.903 (n=97)

Panel C:Estimated Coefficients

DFRATE2	-0.031
SAR	-0.009
SUE	0.008
RA	0.113

[a] The outcome assumed in DFRATE2 was aggressive reporting, no audit adjustment.

[b] DFRATE2 = Decision frame
TIC = Taxable income components
TIME = Tax payment timing
SAR = Subjective audit rate
SUE = Subjective uncertainty estimate
RA = Risk attitude

[c] Since a prediction was made about the direction of the effect of a factor, the p-values reported here are one-half of that normally reported for an F test and correspond to a one-tailed t test.

Table 5-11
Tax Reporting Choice Model
Using the Predicted DFRATE3[a]
as the Decision Frame

Panel A:ANCOVA Results
R^2=.1489

Sources[b]	DF	SS	F	Pr > F
Predicted DFRATE3	1	0.488	0.19	.3336[c]
TIC	1	7.181	2.73	.1000
TIME	1	0.378	0.14	.3525[c]
SAR	1	6.198	2.36	.0632[c]
SUE	1	6.011	2.29	.0661[c]
RA	1	16.777	6.38	.0062[c]
Error	191	513.147		

Panel B:Cell Means

Income	3.832 (n=101)
Expense	5.077 (n=97)

Panel C:Estimated Coefficients

Predicted DFRATE3	0.175
SAR	-0.009
SUE	0.009
RA	0.114

[a] The outcome assumed in DFRATE3 was aggressive reporting, audit adjustment.

[b] DFRATE3 = Decision frame
TIC = Taxable income components
TIME = Tax payment timing
SAR = Subjective audit rate
SUE = Subjective uncertainty estimate
RA = Risk attitude

[c] Since a prediction was made about the direction of the effect of a factor, the p-values reported here are one-half of that normally reported for an F test and correspond to a one-tailed t test.

Table 5-12
Tax Reporting Choice Model
Substituting the TIC*TIME Interaction
for the Decision Frame

Panel A:ANCOVA Results
R^2=.1481

Sources[a]	DF	SS	F	Pr > F
TIC*TIME	1	0.004	0.00	.4840[b]
TIC	1	34.057	12.66	.0005
TIME	1	0.089	0.03	.4279[b]
SAR	1	6.404	2.38	.0622[b]
SUE	1	6.089	2.26	.0671[b]
RA	1	17.425	6.48	.0059[b]
Error	191	513.630		

Panel B:Cell Means

	Current	Delayed	Overall
Income	3.966 (n=49)	3.999 (n=52)	3.982 (n=101)
Expense	4.897 (n=45)	4.949 (n=52)	4.923 (n=97)

Panel C:Estimated Coefficients

SAR	-0.009
SUE	0.009
RA	0.116

[a] TIC = Taxable income components
TIME = Tax payment timing
SAR = Subjective audit rate
SUE = Subjective uncertainty estimate
RA = Risk attitude

[b] Since a prediction was made about the direction of the effect of a factor, the p-values reported here are one-half of that normally reported for an F test and correspond to a one-tailed t test.

Table 5-13
Tax Reporting Choice Model With
Dichotomous Dependent Variable and
Substituting the TIC*TIME Interaction
for the Decision Frame

Panel A:Probit Results

Sources[a]	DF	Chi-square	Pr > Chi
TIC*TIME	1	0.703	0.4017
TIC	1	6.204	0.0127
TIME	1	0.010	0.9206
SAR	1	1.014	0.3139
SUE	1	0.136	0.7122
RA	1	6.850	0.0089

Panel B:Percentage of Subjects Choosing Aggressive Behavior

	Current	Delayed
Income	57% (n=49)	60% (n=52)
Expense	80% (n=45)	73% (n=52)

Panel C:Estimated Coefficients

SAR	-0.004
SUE	0.002
RA	0.098

[a]TIC = Taxable income components
TIME = Tax payment timing
SAR = Subjective audit rate
SUE = Subjective uncertainty estimate
RA = Risk attitude

CHAPTER 6
SUMMARY AND CONCLUSIONS

Summary of the Study

The hypotheses developed in Chapter 3 predicted that two tax structure variables, taxable income components and tax payment timing, would have an effect on the decision frame adopted by individuals when faced with a tax reporting decision where the proper tax treatment was uncertain. The decision frame, in turn, was predicted to affect the tax reporting choice. In addition to the indirect effect on the tax reporting choice via the decision frame, the type of item being reported (either income or expense) and the tax payment timing were predicted to affect the tax reporting choice directly.

To test these hypotheses, the experiment described in Chapter 4 was conducted. Student subjects participated in a business simulation where the true purpose of the study was disguised. The study was conducted over a four-week period to expose subjects to real time differences in tax payment timing. Subjects in the delayed timing condition received the item in the second week of the study while those in the current condition received the item in the fourth week. In the fourth week, all subjects completed tax returns and made tax reporting choices for an income or expense item that differed only in the sign of the item (either receipt or payment). Immediately after the tax reporting choice was made, the subjects' decision frames were measured. The frames were measured using subjects' responses in both rating and ranking tasks, resulting in several different decision frame measures. Subjects earned lottery tickets based on their participation in the study; the tickets were entered into a drawing and 11 cash prizes were awarded. Additional tickets could be earned by choosing aggressive tax reporting behavior.

Summary and Discussion of Results

The purpose of this study was to answer three specific research questions: (1) Are decision frames affected by taxable income components and tax payment timing? (2) Are tax reporting choices related to decision frames? and (3) Are tax reporting choices different depending on the type of taxable income component and tax payment timing? The first two questions relate to the indirect effect that the tax structure variables were predicted to have on tax reporting choices while the last question concerns the direct effect of the tax structure variables on tax reporting behavior. The process of answering the research questions was guided by the predictions developed in Chapter 3.

The hypothesis related to the first question predicted that subjects' adoption of gain or loss decision frames would be a function of the interaction between the nature of the item being reported (income or expense) and the tax payment timing. The differential effect that tax payment timing was expected to have on income and expense items was based on the concepts of integration and segregation from mental accounting. The predicted effect was supported for one decision frame measure using the rating task. For this decision frame measure, income subjects in the current condition reported thinking more about statements describing the situation as a gain than did subjects in the delayed condition. Because the current subjects made the tax reporting choice immediately after receiving the income item, they were more likely to integrate the taxes with the income item, viewing the net result as a gain. Since delayed subjects experienced a two-week lag between the receipt of the income item and the payment of taxes, they were less likely to integrate the taxes with the income, instead viewing the tax payment itself as a loss. The pattern of responses for expense subjects was consistent with the predictions but the tax payment timing effect was not significant.

The hypothesis related to the second question was based on prospect theory which predicts that decision alternatives that are framed as gains will produce risk averse behavior while alternatives that are framed as losses will result in risk seeking behavior. The predicted relationship between the decision frame and the tax reporting choice was supported for one decision frame measure using the rating task. The positive coefficient on the decision frame variable suggests that loss frames were associated with greater preferences for aggressive behavior. The relationship was also supported when an alternative decision frame measure using the ranking task was included in the tax reporting choice model as an exogenous variable.

The effects of the tax structure variables suggested by the third research question were examined by testing predictions of two separate hypotheses. The predicted effect that the type of taxable income component was expected to have on tax reporting choices was founded on empirical evidence that suggested that individuals have different preferences for aggressive tax reporting behavior depending on whether the choice is made for an income or an expense item. The hypothesis was nondirectional because the prior empirical data implied a different pattern when only business-related items were examined than when all taxable income items were considered. The predicted relationship between the type of taxable income component and the level of aggressiveness was strongly supported, regardless of the decision frame measure included in the tax reporting choice model. For the taxable income component item in this study, more aggressive behavior was preferred for the expense item. Such a result might be explained by differences in other attributes associated with income and expense items. However, efforts were taken to control for such differences. First, subjects in the income and expense conditions made tax reporting choices for the same basic financial transaction. Second, empirical results suggest that opportunity plays a big part in explaining differences in tax reporting behavior for income and expense items. In the experimental setting, the opportunity for aggressive reporting was the same for all subjects. Third, one attribute that income and expense items might differ on is the uncertainty associated with the proper tax treatment. Indeed, the average subjective uncertainty estimate for the expense item was much greater than that for the income item. When the subjective uncertainty estimate was included in the tax reporting choice model along with the taxable income components factor, both were significant. The joint significance of these two variables suggests that the type of item has an effect on tax reporting choices other than through differences in uncertainty. The finding that more aggressive behavior was preferred for expense items than for income items is consistent with IRS estimates of voluntary compliance for business income and rent and royalty income.[1]

The examination of the direct effect of tax payment timing on tax reporting choices is an extension of the payment/refund effect posited in prior framing research. One interpretation of research suggesting that taxpayers with payments due are more aggressive than taxpayers with refunds due is that taxpayers become more aggressive as the time increases between when a transaction occurs and when it is reported for tax purposes. Based on this, subjects in the delayed condition were expected to be more aggressive than those in the current condition. The predicted effect was not significant in any of the tax reporting choice models reported in Chapter 5.

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[1] One other difference in tax reporting for income and expense items might be that individuals perceive the "morality" of not reporting uncertain income differently than deducting an uncertain expense. A question was included on the debriefing questionnaire to measure such a tendency. Based on the average response reported in Appendix B, there was no difference in the morality associated with not reporting uncertain income compared with deducting an uncertain expense.

Although the effects of the subjective audit rate and individuals' risk attitudes were not the primary focus of the study, the consistent results reported in Chapter 5 for these two variables merit attention. The use of a measured, rather than a manipulated, audit rate may be useful in other experimental tax reporting research. Since the public's tendency to overestimate the probability of audit is well-known, individuals' perceptions of the audit rate may be more related to actual tax reporting behavior than the actual audit rate. Experimental tax reporting research examining the effect of the probability of audit often relies on audit rates that are unrealistically high. Certainly, the measure used here is not perfect but the subjective audit rate was consistently significant in the tax reporting choice models with the expected result that lower perceived audit rates were associated with more aggressive behavior.

The measurement of risk attitudes is a very complex topic. Measurement techniques vary from questionnaire-type methods as used here to certainty equivalence measures (see Selto and Cooper (1990) for a review). The consistent effect that the risk attitude had on the tax reporting choice suggests that the concept of risk captured by this measure (the Jackson Personality Inventory subscale) is related to risk-taking in tax reporting settings. Collins et al. (1990) did not find this risk attitude measure significant in the decision to hire a professional tax preparer.

Contributions and Implications

Contributions to Tax Reporting Research Literature

The contributions of this study are (1) an extension of prior tax reporting research on framing effects and (2) an explicit examination of the effects of tax structure variables on tax reporting decision-making.

The present research extends prior work on the effects of framing in the tax reporting context by providing a measure of the decision frame. The contribution of such a measurement is two-fold. First, predictions of the decision frame are developed based on the concepts of integration and segregation from mental accounting. With the exception of Chang et al. (1987), other studies have assumed that refunds generate gain frames while loss frames result from payments.[2] When the results support the behavior predicted from assuming a given decision frame, the conclusion is often that the predictions of prospect theory hold. If the predicted results are not found, the possibility that refunds and payments do not result in the predicted frames cannot be distinguished from the explanation that the frame did not affect the choice (i.e., a joint hypothesis is being tested). The problems associated with assuming the frames that result from payments and refunds are illustrated in Sawyers (1991). In this study, only 32% of the subjects receiving refund scenarios adopted gain frames. Although many issues related to the decision frame measure more properly belong in the limitations section of this chapter, attempting to measure the frame may allow for a more powerful test of prospect theory's predictions. While the results for H1 and H2 can be characterized as weak, the results of the joint test of H1 and H2, similar to the methodology employed in prior framing studies (Hite et al. 1988; Robben et al. 1988; Schadewald 1989; Dusenbury 1990; Schepanski and Kelsey 1990), provided no significant results.

Second, the measurement of the decision frame allows the relationship between the frame and the aggressive behavior to be explicitly tested. Predictions of prospect theory concerning the effect that decision frames have on choices under uncertainty can be supported or rejected rather than jointly testing that the assumed frame was adopted and that it affected the choice as predicted. In addition, the relative importance of the decision frame can be compared to other variables included in the tax reporting choice model. In the present study, the significance of the decision frame was smaller than that of the other variables.

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[2] Schadewald (1989) also included predictions of gain and loss frames as the result of taxpayers' expectations.

While extending the framing research, the study is also characterized by its explicit examination of the effect of two tax structure variables, taxable income components and timing. As explained in Chapter 2, neither of these factors has been the focus of research efforts to date. As such, evidence on the relationship of these variables to tax reporting behavior has often included the effects of confounding variables. Given the IRS budgetary limits and the size of the federal deficit, researchers have an incentive to study the relationship between tax reporting behavior and aspects of the tax structure that are not expressly related to the government's effort to increase voluntary compliance.

While not primary contributions, two methodological enhancements of the study were intended to provide more powerful tests of the hypotheses. First, subjects in the current and delayed timing conditions were exposed to real time differences. Second, subjects were given cash incentives. Use of the lottery system allowed incentives to be provided to almost 200 subjects without a prohibitive cost to the researcher.

Implications for Tax Policy

Conclusions based on the results for the framing hypotheses are premature at this time. Although the results suggest that the tax payment timing may affect how taxpayers think about the tax reporting decision, future research is warranted.

The result that is the most relevant for tax policy purposes is the finding that more aggressive behavior was chosen for expense items than for income items even after controlling for differences in uncertainty about the proper tax treatment. Such a finding is especially relevant for taxpayers with activities where the opportunity for aggressive behavior is relatively equal between income and expense items (i.e., self-employed taxpayers).

Differences in tax reporting behavior depending on the type of item could have important policy implications in the current "tax base-broadening" legislative environment. The Tax Reform Act of 1986 (U.S. Congress 1986) was generally able to maintain the present level of revenue by broadening the base (expanding the definition of gross income and limiting or eliminating deductions) while reducing the tax rate. The Revenue Reconciliation Act of 1990 (U.S. Congress 1990) further broadened the tax base by reducing allowable deductions for high-income taxpayers. If taxpayers are more likely to be aggressive when reporting expenses, legislative attempts to further broaden the base by reducing allowable expenses could result in increased revenue due to a decrease in taxpayer aggressiveness.

Of course, any policy implications are premature without a better understanding of differences in aggressiveness for taxable income components. One explanation is that taxpayers are trying to recoup part of the cost of the expense by choosing aggressive behavior. Conversely, when income is received, perhaps taxpayers do not mind paying a part of the receipt out in taxes since the net amount is always greater than zero. Such reasoning is consistent with integration of the tax consequences with the taxable income component item. However, both income and expense subjects in the present study were more likely to segregate the tax consequences. Another explanation of the differential preferences for aggressive reporting is that taxpayers feel more comfortable with aggressive reporting for expense items because deducting the item on the tax return (the very act of being aggressive) makes the item open to IRS scrutiny. This interpretation only makes sense for items where the tax treatment is truly uncertain and the taxpayer is making a good faith effort to report; for taxpayers engaging in outright tax evasion, omitting income items should be the preferable method.

Limitations

One of this study's contributions is its most serious limitation: the measurement of the decision frame. First, the present study does not consider all possible decision frames available to subjects. The focus here was on frames resulting from integration and segregation. Second, it is difficult to determine whether the decision frame measure really captured the integration and segregation concepts. It was clear from the analysis in Chapter 5 that subjects responded differently to the three primary decision frame measures even though the features of interest to the researcher, integration and segregation, were the same in each set of questions used in the three measures. Because of this, several alternative decision frame measures were analyzed. The results of hypothesis tests concerning the decision frame were dependent on the frame measure used.

As discussed in Chapter 4, the use of student subjects restricts the generalizability of the results. Of course, generalization of the results to the general population (self-employed taxpayers in particular) is not appropriate unless it can be shown in future research that similar results can be obtained with more experienced taxpayer-subjects. However, in this complex decision task, the first step is to examine whether the choices of a homogeneous group of subjects, like students, support the predicted results.

The tax reporting choice was made in an experimental setting and may not reflect choices subjects would make in an actual tax reporting setting. Although a dichotomous variable (aggressive or conservative reporting) that was more representative of an actual tax reporting choice was available, the analyses reported in Chapter 5 were performed on the strength of the preference for aggressive behavior to utilize the variation available in such a measure. Also, generalizability is limited since reporting choices for a particular transaction (i.e., the lawsuit settlement) were examined in the study.

Directions for Future Research

Research efforts aimed at further investigation of framing effects should seek to develop better measures of decision frames. Chang et al. (1987), Robben et al. (1988) and Sawyers (1991) elicited subjects' frames by asking whether they thought of the decision as a gain or a loss. Research in consumer behavior (Puto 1987; Puto et al. 1985; Rowe and Puto 1987; Qualls and Puto 1989) has provided support for prospect theory's predictions by asking subjects to indicate the price that served as the reference point in the purchase decision. Simplicity for subjects is a benefit of such a decision frame measurement task. Perhaps more simplistic, yet powerful, measurement methods are available for the framing of tax reporting decisions as well.

Predictions regarding the use of integration or segregation may be extended to other areas of taxpayer behavior. For example, the concepts of integration and segregation may be related to the effects that the payment mechanism has on how taxpayers think about tax reporting. The fact that most taxpayers overpay their taxes through withholding could be explained by preferences for the natural integration of tax payments with the related income. Of course, items subject to withholding generally do not have uncertain tax consequences. Also, taxpayer decision-making that is undertaken in purposeful tax planning may be more likely to include the concept of integration while tax compliance after the fact may be more likely to segregate the tax consequences from the underlying transaction.

Further research into the effects of the tax structure appears to hold promise. One topic for future study is the examination of CPAs' claims that clients exhibited a sensitivity to changes in the tax base even though the concurrent tax rate reductions produced an unchanged tax liability following the Tax Reform Act of 1986 (U.S. Congress 1986).

APPENDIX A
EXPERIMENTAL MATERIALS

The materials reproduced in this appendix were given to subjects assigned to the income taxable income component condition and the current timing condition. The materials are presented in the following order: (1) introduction letter; (2) background information for Happy Car; (3) pre-experiment questionnaire (measured the risk attitude, subjective audit rate, subjective uncertainty estimate); (4) general instructions; (5) Rules for Earning Tickets; (6) Period 1 instructions (same as Periods 2 and 3); (7) Period 1 cash flow information; (8) Period 1 cash flow computation form (same as Periods 2 and 3); (9) Period 1 withdrawal form (same as Periods 2 and 3); (10) Period 2 cash flow information; (11) Period 3 cash flow information; (12) Period 4 instructions; (13) Period 4 cash flow information (included the taxable income component item); (14) Period 4 cash flow computation form; (15) Period 4 withdrawal form; (16) tax return form and instructions; and (17) post-experiment questionnaire (measured strength of preference for aggressive reporting, decision frame).

INTRODUCTION LETTER

Dear UF Student:

I need volunteers to participate in a study I am conducting for my Ph.D. dissertation here at the University of Florida. I know that as a student, your time is limited and I would appreciate very much your participation in this study. Your participation is voluntary and you may withdraw from the study at any time.

If you choose to participate, you would attend a session once every week for several weeks. The first session will begin the week after Spring Break (March 18-22). The experiment will conclude prior to Dead Week. None of the sessions will take longer than one hour, some of them will only take 30 minutes. The sessions will take place on Tuesdays, Wednesdays and Thursdays. The time of the sessions will correspond to the time of class periods. To make the sessions convenient for you to attend, all sessions will be held in either the Business Building or Matherly.

Based on the decisions you make in this study, you will earn tickets for a lottery with seven prizes of $200 (1), $100 (2), and $50 (4). The money for the lottery prizes is coming from my personal funds. Since it is important to my research that each participant attends all sessions, it is necessary for you to participate in each of the weekly sessions to earn tickets. All tickets will be entered in a drawing that will be held upon conclusion of the study. The range of tickets that can be earned is from 1 to 10. (Everyone gets a chance to win a prize.)

This study is about business decisions made by self-employed persons. You will assume the role of the owner of an unincorporated business and will receive information about the cash flow of your hypothetical business, Happy Car, each week. Based on the cash flow, you will be asked to decide how much you would withdraw as compensation from Happy Car. To make the setting more realistic, you will also complete tax returns and pay the resulting tax liability. The tax return is fairly simple; it is not necessary for you to have had a tax course to be able to complete the tax return.

In order to protect your privacy, no one else will have access to any of your decisions. As the researcher, I will maintain records for the experiment based on the last four digits of your telephone number.

There are no right answers in this study. I am only interested in the choices that you prefer. Since this study is concerned with decisions made by individuals, my research analysis assumes that participants have worked independently. It is important that you do not discuss the decisions you make or anything else about the study with other participants either while you are in a session or outside of a session.

I will be happy to answer any questions that you have about the study. If you have questions at a later time, you may call my office, 392-1039, or leave a message at the Fisher School of Accounting office, 392-0155. I will be in your classes the week before Spring Break to ask for volunteers to sign up to participate. The conclusions based on the results of this study will be made available to all participants.

Sincerely,

Cindy A. Copp, CPA
Ph.D. student
Fisher School of Accounting

BACKGROUND INFORMATION FOR HAPPY CAR

You are the sole owner of an unincorporated automobile parts store, Happy Car. You purchased Happy Car several years ago from another individual, Bob Sheehan. Since the time that you purchased Happy Car, you have developed a strong customer following, primarily because of the wide assortment of parts in stock and your reputation for helpfulness and knowledge. In addition, you have enjoyed a good relationship with most of your major distributors. You were originally operating the business completely by yourself but your business has grown so much that you now have two full-time employees. Happy Car currently leases space in a shopping center but you would like to build your own building in the future. In the long-run, you would like to expand to more locations.

You are very involved with the day-to-day operations of Happy Car. You typically spend 10 hours a day, 6 days a week working at Happy Car. You help customers, order inventory, answer general auto repair questions that customers frequently have, and handle all the bookkeeping records.

All of your transactions are in cash (i.e., you don't sell or purchase merchandise on account or use credit). Cash flow other than from the sale of auto parts is relatively minor. Your cash expenditures have been fairly constant in the past. The typical cash outflows include inventory purchases, rent expense, salary expense, and utility expense.

In each business period, you prepare a cash flow statement, Form CF. Form CF shows all the cash inflows and outflows. Based on the statement, you decide how much you want to withdraw from the business as your compensation for that period. In addition, since Happy Car's tax return is very straight-forward, you prepare it yourself. In the past, you have called a CPA, Michelle Evanson, for any questions that you've had about preparing the tax returns.

PRE-EXPERIMENT QUESTIONNAIRE

LAST 4 DIGITS OF YOUR TELEPHONE NUMBER________________

I. INSTRUCTIONS: Please answer the following questions.

1. What is your classification? (Please circle one.)

   Junior Senior M.Acc. M.B.A.

2. What is your major? (Please circle one.)

   Accounting Economics Finance Management Marketing

   Other______________

3. What is your grade point average? (You may estimate this if you're not sure).

   ____

4. What is your gender?

   Female Male

II. INSTRUCTIONS: Following you will find a series of statements which a person might use to describe himself/herself. Read each statement and decide whether or not it describes you. If you agree with a statement or decide that it does describe you, circle the "T" to indicate TRUE. If you disagree with a statement or feel that it is not descriptive of you, circle the "F" to indicate FALSE. Circle either "T" or "F" for every statement, even if you are not completely sure of your answer.

T F 5. When I want something, I'll sometimes go out on a limb to get it.

T F 6. In games I usually "go for broke" rather than playing it safe.

T F 7. I probably would not take the chance of borrowing money for a business deal even if it might be profitable.

T F 8. Taking risks does not bother me if the gains involved are high.

T F 9. I rarely make even small bets.

T F 10. I would enjoy bluffing my way into an exclusive club or private party.

T F 11. I would prefer a stable position with a moderate salary to one with a higher salary but less security.

T F 12. I consider security an important element in every aspect of life.

T F 13. I enjoy taking risks.

T F 14. If I invested any money in stocks, it would probably only be in safe stocks from large, well-known companies.

II. INSTRUCTIONS: Following you will find descriptions of several situations that involve uncertainty. Each of these situations reflects uncertainty that is typical for the owner of a small business (i.e., a self-employed person).

Read each statement and decide what the chances are that this event will happen. Remember that you are assuming the role of the owner of Happy Car. Circle the probability that you think best represents the chances that the situation might occur. Circle a probability for every statement, even if you are not completely sure of your answer. Each of the events are independent of the others. There are no right answers.

15. If a major auto parts chain moved into Happy Car's area, what do you think the chances are that Happy Car would be able to stay competitive in prices?

|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

Happy Car will definitely not be able to stay competitive	Happy Car will definitely be able to stay competitive

16. Happy Car's two employees are quite valuable because of their knowledge and expertise. What do you think the chances are that one of Happy Car's two employees will quit within the next year?

|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

employee will definitely not quit	employee will definitely quit

17. As the owner of Happy Car, you are responsible for filing Happy Car's tax return and for paying any taxes that are due. What do you think the chances are that Happy Car's tax return will be selected for an audit by the government (i.e., the IRS)?

|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

tax return will definitely not be selected for audit	tax return will definitely be selected for audit

18. What do you think the chances are that Happy Car will be able to build a new building in the next 2 years?

|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

new building will definitely not be built in next 2 years	new building will definitely be built in next 2 years

19. What do you think the chances are that Happy Car will be able to expand to more locations in the next 5 years?

|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

will definitely not be able to expand to more locations in next 5 years	will definitely be able to expand to more locations in next 5 years

20. Happy Car has received a cash receipt. Happy Car's CPA tells you that it is uncertain whether or not this receipt is tax free (i.e., it might be tax free). If the receipt is tax free, you would not be required to report it on Happy Car's tax return and would pay less tax. What do you think the chances are that this cash receipt would be considered tax free by the government (i.e., the IRS)?

|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

the government will definitely not consider the receipt tax free	the government will definitely consider the receipt tax free

21. Happy Car has been asked to be a sponsor for the 1992 Gatornationals Races. Sponsoring this event is a very "high profile" activity because of the exposure of the sponsors' names. However, the cost of sponsorship is very high. If you decide to be a sponsor, you will have to eliminate your regular advertising campaigns for the next year (e.g., newspaper ads, television commercials). What do you think the chances are that sponsoring Gatornationals will be as effective as your regular advertising campaigns?

|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

sponsoring Gatornationals will definitely not be as effective as the regular advertising campaigns	sponsoring Gatornationals will definitely be as effective as the regular advertising campaigns

GENERAL INSTRUCTIONS

In each week of the study, you will be given information about the cash flow generated by Happy Car. Each week represents a separate business period that is 3 months long. The study will last for five weeks.

You will receive information each week concerning the cash received in and the cash paid out during the business period. You will compute the total cash flow for each period on Form CF. After computing the total cash flow each period, you will indicate the amount that you would like to withdraw from Happy Car on Form WD. The purpose of the withdrawal is to compensate you for the services that you provided to Happy Car during the period. I am interested in how you allocate Happy Car's total cash flow between the amounts you withdraw and the amounts that you leave in the firm. You will not receive any other information about your personal cash needs.

In addition, in the final period (the final week of the study), you will prepare an income tax return, Form TAX, based on the cash flow information for all the periods. The tax rate is 33%. The amount of tax that you owe on Form TAX will reduce your business cash account.

The number of tickets that you earn in the study will be based on your withdrawals and Happy Car's business cash account. You can think of the business cash account as Happy Car's cash balance. The business cash account will be increased by the cash flow from Happy Car, decreased by your withdrawals, and decreased by the taxes due on Form TAX. This will be explained in more detail shortly.

To summarize, you will be asked to specify your cash withdrawals in each week. At the end of the final week, you will prepare an income tax return. When you choose withdrawal amounts, remember that you must have enough left in your business cash account at the end of the final period to pay the taxes you owe.

The specific method used to determine the number of tickets that you earn is discussed in "Rules for Earning Tickets." Please read this now and work through the examples to make sure that you understand how this works. It is important that you understand these rules. Remember that the more tickets you earn, the better your chances are to win a prize!

RULES FOR EARNING TICKETS

You are assuming the role of a self-employed business person (a sole proprietor) and are asked to make decisions similar to what "real" self-employed individuals must make. Admittedly, the setting that the study presents is not completely realistic. It is not possible to include all the complexities of real business decisions in a study like this one.

However, the system for earning tickets in the study is intended to reflect one common type of decision that sole proprietors must make: how to allocate the cash flow generated by the business between: (1) amounts withdrawn as their own current compensation and (2) amounts retained in the firm to provide resources in the future. Amounts that sole proprietors withdraw from the business would be used for personal needs, just like a salary that employees receive. Amounts that are retained in the firm are expected to produce more cash flow in the future, increasing the value of the firm. However, the increase in the firm's future value is not guaranteed; it depends on some factors that are beyond the sole proprietor's control.

The system to earn tickets is intended to reflect the benefits that sole proprietors receive from their business' cash flow. There are two ways that you can earn lottery tickets: (1) Withdrawal Tickets from your cash withdrawals made in all of the periods and (2) Value Tickets from the value of your business determined at the end of the study (based on Happy Car's business cash account and other factors).

WITHDRAWAL TICKETS. Each $10,000 of cash withdrawals made during the periods earns 1 ticket. The number of Withdrawal Tickets that you can earn is equal to the total withdrawals (over all of the periods) divided by $10,000. Withdrawals of any fraction of $10,000 must exceed .5 to earn another ticket. For example, if your total withdrawals are $12,500, you earn one Withdrawal Ticket ($12,500/$10,000=1.25). However, if your total withdrawals are $16,000, you earn 2 Withdrawal Tickets ($16,000/$10,000=1.6). The timing of the withdrawals over the periods does not affect the number of Withdrawal Tickets that you earn (i.e., you earn the same number of Withdrawal Tickets for withdrawals made in Period 5 that you do for withdrawals made in Period 1).

You can keep track of your total amount of withdrawals on Form WD. Each period, Form WD will give you the total amount of withdrawals made in prior periods.

VALUE TICKETS. Value Tickets are earned from the value of your firm at the end of the study. Your firm will be classified as one of the four following types of firms. Each type of firm earns a different number of Value Tickets.

High value firms	12 tickets
Medium high value firms	6 tickets
Medium low value firms	0 tickets
Low value firms	-6 tickets

Firms with high amounts in the business cash account at the end of the study will be more likely to have high values (higher valued firms earn more Value Tickets). Firms with low amounts in the business cash account at the end of the study will be more likely to have low values (lower valued firms earn fewer Value Tickets).

Your firm will be classified as a high, medium high, medium low or low value firm based on the amount in the business cash account at the end of the study. The schedule below gives the probabilities that your firm will be a certain type, depending on how much is in the business cash account.

AMOUNT IN BUSINESS CASH ACCOUNT AT END OF STUDY	CHANCES OF BEING THIS TYPE OF FIRM			
	HIGH	MED. HIGH	MED. LOW	LOW
More than $160,000	85%	10%	5%	0%
Between $140,000 and $159,999	60%	30%	5%	5%
Between $120,000 and $139,999	30%	60%	5%	5%
Between $100,000 and $119,999	5%	75%	15%	5%
Between $ 80,000 and $ 99,999	5%	45%	45%	5%
Between $ 60,000 and $ 79,999	5%	10%	80%	5%
Between $ 40,000 and $ 59,999	5%	5%	55%	35%
Between $ 20,000 and $ 39,999	5%	5%	25%	65%
Less than $20,000	0%	5%	5%	90%

For example, if your total cash flow over all the periods is $450,000, your taxes are $150,000, and your withdrawals are $180,000 (the balance in the business cash account is $120,000), you would have: (1) a 30% chance of being a high value firm and earning 12 tickets; (2) a 60% chance of being a medium high value firm and earning 6 tickets; (3) a 5% chance of being a medium low value firm and earning 0 tickets; and (4) a 5% chance of being a low firm and losing 6 tickets.

In the example above, if your firm is determined to be a medium high firm, your total tickets will be 24 (180,000/10,000 = 18 for withdrawals, 6 for being a medium high value firm).

You will keep track of the balance in the business cash account at the end of each period on Form CF. Each period, Form CF will give you the amount in the business cash account at the beginning of the current business period (i.e., the amount of your business cash account at the end of the previous business period).

Since the value of your business is based on Happy Car's business cash account, the value of the firm is affected by your cash withdrawals and the amount of taxes that you owe from the tax return. Also, because you don't know for certain that your firm will be a specific type, the value is affected by conditions that are beyond your control. These probabilities are intended to represent the uncertainty about general economic conditions that sole proprietors face in the real world.

TOTAL TICKETS. If your firm is valued as a high or medium high value firm, the total number of tickets that you earn will be the number of Value Tickets (either 12 or 6) plus the number of Withdrawal Tickets that you earn. If your firm is valued as a medium low value firm, your total tickets earned from the study will be based solely on your Withdrawal Tickets (Value Tickets are 0). If your firm is valued as a low value firm, 6 tickets will be subtracted from your Withdrawal Tickets. Even if your firm is determined to be a low value firm and you lose tickets, the minimum total number of tickets that you can earn is 1 (i.e., everyone gets at least 1 ticket). The maximum number of total tickets that you can earn is 28.

WHAT CAN I WIN WITH THE TICKETS? The tickets will be entered in a drawing with cash prizes of $200 (1), $100 (2) or $50 (4). No one can win more than one prize. All tickets will be awarded following the final week of the study. Remember that it is necessary for you to participate in all weekly sessions to be eligible to earn tickets.

HOW CAN I EARN THE MOST TICKETS? There is no "right" way to increase the number of tickets that you earn. Assume that both Student A and Student B had cash flow after taxes of $120,000. Student A withdrew $120,000 and earned 12 Withdrawal Tickets (120,000/10,000=12). Since Student A had less than $20,000 left in the business cash account (120,000-120,000=0), she has a 5% chance of being a medium high value firm, a 5% chance of being a medium low value firm and a 90% chance of being a low value firm. Student A got lucky and was classified as a medium high value firm, earning 6 Value Tickets. In total, Student A earned 18 tickets.

Student B withdrew $60,000 and earned 6 Withdrawal Tickets. Since Student B had $60,000 in the business cash account (120,000-60,000=60,000), he had a 5% chance of being a high value firm, a 10% of being a medium high value firm, an 80% chance of being a medium low value firm and a 5% chance of being a low value firm. Student B also got lucky and was classified as a high value firm, earning 12 Value Tickets. In total, Student B also earned 18 tickets, although Student A and Student B made very different withdrawal decisions.

Once cash is withdrawn, it cannot be invested back into the business. Remember that the sum of your withdrawals and the amount in the business cash account is equal to the total cash flow after taxes; it is not possible to have very high withdrawals and also retain a very high amount in the business cash account.

TICKETS MAY BE REDUCED IF YOUR TAX RETURN IS AUDITED AND AN ADJUSTMENT IS MADE. In addition to your withdrawals and the ending value of your firm, there is one other factor that can affect the number of tickets that you earn. At the end of the study, prior to determining the value of your firm, some of the tax returns will be selected at random for audit. If your return is audited and it is determined that taxable income was incorrectly reported, the additional tax and a penalty of 50% of the additional tax will be subtracted from your total withdrawals. If your return is not audited, your withdrawals will be not reduced for any tax and penalty, even if you have incorrectly reported taxable income. The amount of taxable income that you report on Form TAX should not be exactly the same as the total cash flow because of differences in taxable income and cash flow.

Please work through the examples provided on the next page to make sure that you understand how tickets can be earned. You don't have to memorize these rules; you will have a copy of these rules available in each week when you choose your withdrawals. It is very important that you understand how the rules work.

RULES FOR EARNING TICKETS EXAMPLES

EXAMPLE 1

INSTRUCTIONS: In this example, assume that no taxes are required to be paid. Your total cash flow is $180,000 and you withdrew $120,000. Please answer the following questions by looking back at the rules.

1. How many tickets will you earn for withdrawals? ________________
2. What amount is in the business cash account? ________________
3. What is the probability that your firm will be a medium high value firm? ________________
4. What kind of value (high, medium high, medium low, or low) is your firm most likely to be classified as? ________________
5. If you are valued as a medium low value firm, how many tickets will you earn in total (including the Withdrawal Tickets)? ________________

EXAMPLE 2

INSTRUCTIONS: The facts are similar to example 1 but now you are required to pay tax. Once again, your total cash flow is $180,000. Your tax liability is $60,000 so that your after-tax cash flow is $120,000. Please answer the following questions by looking back at the rules.

6. If you wanted to withdraw the same amount as in Example 1, how many Withdrawal Tickets would you earn? ________________
7. Based on the withdrawals in question 6, what amount is in the business cash account? ________________
8. Based on the withdrawals in question 6, what is the probability that your firm will be a medium high value firm? ________________
9. What kind of value (high, medium high, medium low, or low) is your firm most likely to be classified as? ________________
10. If you are valued as a low value firm, how many tickets will you earn in total (including the tickets for withdrawals)? ________________
11. If you had paid $90,000 in tax in Example 2, is it more likely that the number of tickets that you earned would increase or more likely that the number of tickets that you earned would decrease? ________________

PLEASE RAISE YOUR HAND WHEN YOU ARE FINISHED WITH THIS PAGE.

INSTRUCTIONS

PERIOD ONE

INSTRUCTIONS: Attached you will find the period one cash flow information, the period one Form CF, and the period one Form WD. Each component of cash flow information is found on a different piece of paper. Cash outflows, or payments, are indicated by parentheses, (), around the amount.

First, compute the total cash flow on Form CF. List the cash receipts on Form CF first, followed by the cash payments. Then, decide how much you want to withdraw from the business cash account as your compensation. Complete Form WD. After completing Form WD, compute the ending balance in the business cash account on Form CF. You may look back at the "Rules for Earning Tickets" if you wish.

PERIOD 1 CASH FLOW INFORMATION

Cash received for:
Sales revenue $221,000

(1A)

Cash received for:
Promotional fee revenue $ 16,000

The promotional fee was received from your major distributor for displaying their name on the front of your store.

(1A)

Cash received for:
Municipal interest income $ 3,000

This $3,000 represents the interest income received on an investment in municipal bonds. The interest received on these bonds is not taxable.

(1A)

Cash paid for:
Inventory purchases ($146,000)

(1A)

Cash paid for:
Rent expense ($ 30,000)

(1A)

Cash paid for:
Salary expense ($ 15,000)
(includes payroll taxes)

(1A)

Cash paid for:
Utility expense ($ 2,300)

(1A)

CASH FLOW COMPUTATION FORM

LAST 4 DIGITS OF YOUR TELEPHONE NUMBER____________________

FORM CF
Cash Flow for Period 1

CASH RECEIVED FOR:	
Sales	____________
Other receipts (please list):	
____________	____________
____________	____________
____________	____________
(1) Total cash received	____________
CASH PAID FOR:	
Inventory purchases	____________
Rent	____________
Salaries	____________
Utilities	____________
Other payments (please list):	
____________	____________
____________	____________
____________	____________
(2) Total cash paid	____________
(3) Total cash flow in Period 1 line (1) minus line (2)	____________
(4) Beginning balance in the business cash account	____________
(5) Withdrawals in Period 1 from Form WD	____________
(6) Ending balance in the business cash account line (3) plus line (4) minus line (5)	____________

PLEASE RAISE YOUR HAND WHEN YOU ARE FINISHED WITH FORM CF.

WITHDRAWAL FORM

FORM WD
Withdrawal for Period 1

Instructions: Complete the information blank below for the last four digits of your telephone number. Indicate on the space provided the amount that you wish to withdraw from Happy Car as compensation for your services this period. The amount you withdraw will reduce your business cash account.

Last 4 digits of your telephone number ____________________

(1) Withdrawal for this period ____________________

(2) Beginning balance withdrawals ________None________

(3) Ending balance withdrawals
line (1) + line (2) ____________________

PERIOD 2 CASH FLOW INFORMATION

Cash received for:
Sales revenue $219,000

(2AC)

Cash paid for:
Inventory purchases ($111,700)

(2AC)

Cash paid for:
Rent expense ($ 30,000)

(2AC)

Cash paid for:
Advertising expense ($ 18,000)

This is the cost of an advertising series that will be featured in a monthly publication that is received by local automobile repair shops and others interested in automobile repair.

(2AC)

Cash paid for:
Salary expense ($ 15,000)
(includes payroll taxes)

(2AC)

Cash paid for:
Utility expense ($ 2,400)

(2AC)

PERIOD 3 CASH FLOW INFORMATION

Cash received for:
Sales revenue $250,000

(3A)

Cash paid for:
Inventory purchases ($155,800)

(3A)

Cash paid for:
Rent expense ($ 30,000)

(3A)

Cash paid for:
Salary expense ($ 15,000)
(includes payroll taxes)

(3A)

Cash paid for:
Warehouse storage expense ($ 5,000)

This is the annual rent paid for storage space in a warehouse used to store excess parts and machinery.

(3A)

Cash paid for:
Utility expense ($ 2,500)

(3A)

Cash paid for:
Loan to employee ($ 1,000)

You gave one of your employees, Ben Morris, $1,000 as a loan. Ben will repay the loan to you in two periods. Since the loan will be repaid, the $1,000 is not deductible as an expense on your tax return.

(3A)

INSTRUCTIONS

PERIOD FOUR

INSTRUCTIONS: This is the final week of the study. Please follow the instructions carefully. If you have any questions, please raise your hand.

Attached you will find the period 4 cash flow information, the period 4 Form CF, and the period 4 Form WD. Each component of cash flow information is found on a different piece of paper. Cash outflows, or payments, are indicated by parentheses, (), around the amount.

In addition, you will find the tax return, Form TAX (and instructions), that will be filed this period. Because the tax return will include the taxable income for periods 1-4, you will also find that your cash flow information from periods 1, 2, and 3 has been returned to you.

In this period, you will (1) compute the period 4 cash flow on Form CF; (2) complete the tax return, Form TAX; (3) decide how much you want to withdraw for the final period; (4) compute the amount of total withdrawals for all periods; and (5) compute the ending balance in the business cash account. You may look back at the "Rules for Earning Tickets" at any time. Please work carefully to avoid math errors.

Step 1: Compute the total cash flow for period 4 on Form CF. List the cash receipts on Form CF first, followed by the cash payments.

Step 2: After you have computed the total cash flow for period 4, complete Form TAX. To do this, you will need the cash flow information for periods 1, 2, 3, and 4. A blank sheet of paper is included for you to use (if you wish) in computing the totals needed for the tax return. Read the instructions for Form TAX carefully. Instructions are given for each line of the tax return. Remember that not all cash flow items will be entered on the tax return. Pay attention to the information given to you regarding whether a cash receipt is taxable or a cash payment is deductible. After completing Form TAX, enter the amount of taxes due on line 6 of Form CF.

Step 3: When you have completed the tax return, decide how much you want to withdraw from the business cash account as your final withdrawal. Enter this amount on Form WD and on line 5 of Form CF.

Step 4: Compute your total withdrawals for all periods on Form WD by adding the period 4 withdrawal amount to the beginning balance of withdrawals. This is the amount of withdrawals that will be used to compute your Withdrawal Tickets.

Step 5: Compute your ending balance in the business cash account by adding the period 4 cash flow to the beginning balance in the business cash account. Then, subtract the period 4 withdrawal amount and the taxes due. This is the amount of the business cash account that will be used to compute your Value Tickets.

PERIOD 4 CASH FLOW INFORMATION

Cash received for:	
Sales revenue	$199,000

(4AC)

Cash received for:	(4AC)
Litigation settlement	$ 60,000

This $60,000 was received in settlement of a lawsuit that arose from a dispute with the individual that sold you Happy Car, Bob Sheehan. You and Sheehan have agreed that the payment from Sheehan to you does not constitute admission of wrongdoing by Sheehan.

You asked a CPA, Michelle Evanson, to review the settlement documents and to advise you whether or not the $60,000 settlement receipt is tax free. If the receipt is tax free, then you would not report the amount on Happy Car's tax return. If the receipt is taxable (i.e., not tax free), then you would report the amount on Happy Car's tax return.

Evanson has concluded that it is very uncertain whether or not the settlement is tax free because the settlement documents do not specify the exact purpose of the payment. Based on her research, Evanson has determined that there is (1) a 50% chance that the government (the IRS) would consider the $60,000 settlement as tax free because it represents damages received for injury to goodwill and (2) a 50% chance that the government (the IRS) would consider the $60,000 settlement as taxable (i.e., not tax free) because it represents lost profits. When you prepare your income tax return, you must decide whether or not to report the $60,000 on your tax return.

Cash paid for:	
Inventory purchases	($131,700)

(4AC)

Cash paid for:	
Rent expense	($ 30,000)

(4AC)

Cash paid for:	
Salary expense (includes payroll taxes)	($ 15,000)

(4AC)

Cash paid for:	
Utility expense	($ 2,400)

(4AC)

Cash received for:	
Repayment of employee's advance	$ 1,000

This is the repayment of the $1,000 loan that you made to your employee, Ben Morris. Since it is the repayment of a loan, it is not taxable.

(4AC)

CASH FLOW COMPUTATION FORM

LAST 4 DIGITS OF YOUR TELEPHONE NUMBER____________________

FORM CF
Cash Flow for Period 4

CASH RECEIVED FOR:

Sales ____________________

Other receipts (please list):

____________________ ____________________

____________________ ____________________

____________________ ____________________

(1) Total cash received ____________________

CASH PAID FOR:

Inventory purchases ____________________

Rent ____________________

Salaries ____________________

Utilities ____________________

Other payments (please list):

____________________ ____________________

____________________ ____________________

____________________ ____________________

(2) Total cash paid ____________________

(3) Total cash flow in Period 4 line (1) minus line (2) ____________________

(4) Beginning balance in the business cash account ____________________

(5) Withdrawals in Period 4 from Form WD, line (1) ____________________

(6) Taxes due from Form TAX, line (15) ____________________

(7) Ending balance in the business cash account line (3) plus line (4) minus line (5) minus line (6) ____________________*

*This is the amount that will be used to compute your Value Tickets.

PLEASE RAISE YOUR HAND WHEN YOU ARE FINISHED WITH FORM CF.

WITHDRAWAL FORM

FORM WD
Withdrawal for Period 4

Instructions: Complete the information blank below for the last four digits of your telephone number. Indicate on the space provided the amount that you wish to withdraw from Happy Car as compensation for your services this period. This is the last withdrawal that you will make in the study. This amount cannot be larger than the balance in the business cash account after reducing the business cash account for the taxes due. The amount you withdraw will reduce your business cash account.

Last 4 digits of your telephone number ____________________

(1) Withdrawal for this period ____________________
(Enter this amount on line (5) of Form CF)

(2) Beginning balance withdrawals ____________________

(3) Ending balance withdrawals
line (1) + line (2) ____________________*

*This is the amount of withdrawals that will be used to compute your Withdrawal Tickets.

INSTRUCTIONS FOR TAX RETURN FORM

GENERAL INFORMATION: The purpose of this form is to help you compute Happy Car's taxable income for Periods 1-4. Please follow the instructions given below for each line.

The taxable income that you compute will not be equal to your total cash flow for periods 1-4 for three reasons. First, there are cash flow items that are not reported on the tax return (i.e., cash receipts that are not taxable and cash payments that are not deductible). Second, you are allowed to deduct depreciation as an expense on your tax return but depreciation does not affect your cash flow. The amount has been entered on the tax return for you. Third, the amount of inventory purchases is not deductible as an expense on the tax return. Instead, you will be allowed to deduct the amount of Cost of Goods Sold. The computation of the Cost of Goods Sold is explained below.

Remember that the tax that you compute on Form TAX will be taken out of your business cash account.

PART I: INCOME

LINE 1: Enter the amount of cash received from sales revenue in periods 1-4.

LINE 2: Turn to PART IV, page 2 and work through the formula to compute Cost of Goods Sold.

PART IV, page 2: The beginning inventory amount has been entered on line 16 for you. Enter the amount of cash paid in periods 1-4 for inventory purchases on line 17. On line 18, add lines 16 and 17 to compute the Cost of Goods Available for Sale. The ending inventory amount has been entered on line 19 for you. Subtract line 19 from line 18 to compute the Cost of Goods Sold. Enter this amount on line 2, page 1. This is the amount related to inventory purchases that you can deduct on Happy Car's tax return. Do not enter the amount of cash paid for inventory purchases during periods 1-4 on line 2, page 1.

LINE 3: Subtract line 2 from line 1. This is the gross profit.

LINE 4: Enter any other taxable cash receipts received in periods 1-4. List each type and amount separately; you may not need all of these lines. Include only cash receipts that are taxable on line 4. Generally, any cash that you receive for performing some task for another party is taxable.

PART II: DEDUCTIONS

LINE 6: Enter the amount of cash paid for advertising expense in periods 1-4.

LINE 7: The amount of depreciation expense for periods 1-4 has been entered for you.

LINE 8: Enter the amount of cash paid for rent expense in periods 1-4.

LINE 9: Enter the amount of cash paid for salaries (and the related payroll taxes) in periods 1-4. Do not include your withdrawals on this line; they are not deductible expenses.

LINE 10: Enter the amount of cash paid for utilities in periods 1-4.

LINE 11: Enter any other deductible cash payments made in periods 1-4. List each type and amount separately; you may not need all of these lines. Do not include your withdrawals or inventory purchases on line 11. Enter only cash payments that are deductible here. Generally, any cash payments for expenses that are necessary for your business are deductible.

PART III: COMPUTATION OF TAXES DUE

LINE 13: Subtract line 12 from line 5. This is Happy Car's taxable income.

LINE 14: The tax rate is 33%.

LINE 15: Multiply line 13 by line 14. (Round up to the nearest dollar.) Enter this amount on line 6 of Form CF; the taxes due will reduce your business cash account. If your return is audited and it is determined that taxable income was incorrectly reported, a penalty of 50% of the additional tax will be assessed.

TAX RETURN FORM

Last 4 digits of your telephone number: ____________________

PART I: INCOME

1	Sales revenue	______________
2	Cost of goods sold (from line 20, page 2)	______________
3	Gross profit. Subtract line 2 from line 1.	______________
4	Other taxable income (please list)	
	a.______________________	______________
	b.______________________	______________
	c.______________________	______________
	d.______________________	______________
	e. Add lines 4 a. through 4 d.	______________
5	Gross income. Add line 3 and line 4e.	______________

PART II: DEDUCTIONS

6	Advertising	______________
7	Depreciation	10,000
8	Rent	______________
9	Salaries paid to employees	______________
10	Utilities	______________
11	Other deductible expenses (please list)	
	a.______________________	______________
	b.______________________	______________
	c.______________________	______________
	d.______________________	______________
	e. Add lines 11 a. through 11 d.	______________
12	Total deductions (add lines 6, 7, 8, 9, 10, 11 e.)	______________

PART III: COMPUTATION OF TAXES DUE

13	Taxable income (subtract line 12 from line 5)	
14	Tax rate	X .33
15	Taxes due: Multiply line 13 by line 14. (Round up to the nearest dollar). Enter this amount on line 6 of Form CF; the taxes due will reduce your business cash account.	

PART IV: COMPUTATION OF COST OF GOODS SOLD

16	Beginning inventory, Period 1	130,000
17	Purchases of inventory during Periods 1-4	
18	Cost of Goods Available for Sale (add lines 16 and 17)	
19	Ending inventory, Period 4	(138,000)
20	Cost of Goods Sold (subtract line 19 from line 18 and enter this amount on line 2, page 1)	

POST-EXPERIMENT QUESTIONNAIRE

LAST 4 DIGITS OF YOUR TELEPHONE NUMBER________________

1. In the choice that you made concerning whether or not to report the $60,000 litigation settlement as income on your tax return, how certain are you of your decision? (Circle one of the numbers below.)

```
Definitely                                           Definitely would
would report                                         not report as
as income on                                         income on
tax return                    Neutral                tax return
  |                                                           |
  |                                                           |
  |---------|---------|---------|---------|---------|---------|
  1         2         3         4         5         6         7
```

INSTRUCTIONS: Each of the six statements below represents a thought that you may have had when deciding whether or not to report the $60,000 litigation settlement as income on your tax return. Circle the number on the scale provided that best represents how much you thought about this particular statement when making your decision. You may agree that all of the statements are true, but what I'm asking is which of these statements you thought about when making your decision. There are no right answers; you may not have thought about every one of these statements.

2. If I report the settlement as income on my tax return, I'll still have a gain from receiving the settlement because I'll have some of the $60,000 settlement left even after paying the tax (the taxes on the settlement are $20,000).

```
Did Not Think                                           Thought About
About This in                                           This A Lot in
Making My Decision                                      Making My Decision
  |                                                           |
  |                                                           |
  |---------|---------|---------|---------|---------|---------|
  1         2         3         4         5         6         7
```

3. If I report the settlement as income on my tax return, I'll have a loss from the taxes that I'll have to pay on the settlement (the taxes on the settlement are $20,000).

```
Did Not Think                                           Thought About
About This in                                           This A Lot in
Making My Decision                                      Making My Decision
  |                                                           |
  |                                                           |
  |---------|---------|---------|---------|---------|---------|
  1         2         3         4         5         6         7
```

4. If I don't report the settlement as income on my tax return and my taxes are not increased in an audit, I'll still have a gain from receiving the settlement because I'll get to keep all of the $60,000 settlement (the taxes on the settlement are $0).

Did Not Think About This in Making My Decision — Thought About This A Lot in Making My Decision

|---------|---------|---------|---------|---------|---------|--------|
1 2 3 4 5 6 7

5. If I don't report the settlement as income on my tax return and my taxes are not increased in an audit, I'll won't have a loss from the taxes that I'll have to pay on the settlement (the taxes on the settlement are $0).

Did Not Think About This in Making My Decision — Thought About This A Lot in Making My Decision

|---------|---------|---------|---------|---------|---------|--------|
1 2 3 4 5 6 7

6. If I don't report the settlement as income on my tax return and my taxes are increased in an audit, I'll still have a gain from receiving the settlement because I'll have some of the $60,000 settlement left even after paying the taxes and the penalty (the taxes on the settlement are $20,000 and the penalty is $10,000).

Did Not Think About This in Making My Decision — Thought About This A Lot in Making My Decision

|---------|---------|---------|---------|---------|---------|--------|
1 2 3 4 5 6 7

7. If I don't report the settlement as income on my tax return and my taxes are increased in an audit, I'll have a loss from the taxes that I'll have to pay on the settlement and the penalty (the taxes on the settlement are $20,000 and the penalty is $10,000).

Did Not Think About This in Making My Decision — Thought About This A Lot in Making My Decision

|---------|---------|---------|---------|---------|---------|--------|
1 2 3 4 5 6 7

INSTRUCTIONS: Now rate the six statements based on how descriptive each statement is of how you thought about whether or not to report the $60,000 litigation settlement as income on your tax return. On the line next to the statement, enter a "1" for the statement that is the most descriptive of how you thought about the decision, a "2" for the statement that is the next most descriptive of how you thought about the decision, and so on. Enter a "6" for the statement that is the least descriptive of how you thought about the decision.

_____ If I report the settlement as income on my tax return, I'll still have a gain from receiving the settlement because I'll have some of the $60,000 settlement left even after paying the tax (the taxes on the settlement are $20,000).

_____ If I report the settlement as income on my tax return, I'll have a loss from the taxes that I'll have to pay on the settlement (the taxes on the settlement are $20,000).

_____ If I don't report the settlement as income on my tax return and my taxes are not increased in an audit, I'll still have a gain from receiving the settlement because I'll get to keep all of the $60,000 settlement (the taxes on the settlement are $0).

_____ If I don't report the settlement as income on my tax return and my taxes are not increased in an audit, I'll won't have a loss from the taxes that I'll have to pay on the settlement (the taxes on the settlement are $0).

_____ If I don't report the settlement as income on my tax return and my taxes are increased in an audit, I'll still have a gain from receiving the settlement because I'll have some of the $60,000 settlement left even after paying the taxes and the penalty (the taxes on the settlement are $20,000 and the penalty is $10,000).

_____ If I don't report the settlement as income on my tax return and my taxes are increased in an audit, I'll have a loss from the taxes that I'll have to pay on the settlement and the penalty (the taxes on the settlement are $20,000 and the penalty is $10,000).

INSTRUCTIONS: If none of the statements above is very descriptive of how you thought about whether or not to report the $60,000 litigation settlement, please briefly describe how you thought about the decision in the space below.

____

____

____

____

____

INSTRUCTIONS: For each of the following statements, please circle the appropriate number on the scale provided that best represents your agreement with the statement. There are no right answers.

8. In deciding whether or not to report the litigation settlement as income on my tax return, I thought about how the taxes on the settlement would affect the number of tickets I could earn.

```
Definitely                                                  Definitely
Disagree                      Neutral                       Agree
   |                                                          |
   |                                                          |
   |--------|--------|--------|--------|--------|--------|
   1        2        3        4        5        6        7
```

9. The decision that I made about whether or not to report the litigation settlement as income on Happy Car's tax return is the same as the decision that I would make on my own tax return if I had received the settlement in real life.

```
Definitely                                                  Definitely
Disagree                      Neutral                       Agree
   |                                                          |
   |                                                          |
   |--------|--------|--------|--------|--------|--------|
   1        2        3        4        5        6        7
```

10. The tax reporting decisions that I made in this study seemed realistic.

```
Definitely                                                  Definitely
Disagree                      Neutral                       Agree
   |                                                          |
   |                                                          |
   |--------|--------|--------|--------|--------|--------|
   1        2        3        4        5        6        7
```

11. When (or if) I file a tax return in real life, I would never want to run the risk of having the IRS increase my taxes in an audit. I would rather pay too much tax than take a chance of possibly having to pay more taxes in an audit.

```
Definitely                                                  Definitely
Disagree                      Neutral                       Agree
   |                                                          |
   |                                                          |
   |--------|--------|--------|--------|--------|--------|
   1        2        3        4        5        6        7
```

12. Flo receives some cash and is honestly not sure whether it is taxable or not. Flo decides not to report the cash receipt as income on her tax return. Joe pays cash for an expense and is honestly not sure whether it is deductible or not. Joe decides to deduct the cash payment as an expense on his tax return.

```
Flo has committed a                            Joe has committed a
worse moral offense                            worse moral offense
than Joe has.               Neutral            than Flo has.
   |                                                     |
   |                                                     |
   |--------|--------|--------|--------|--------|--------|
   1        2        3        4        5        6        7
```

INSTRUCTIONS: Please answer the following questions by marking your choice with an "X."

13. In real life, how many tax returns have you filed?

_______ None

_______ 1-5 tax returns

_______ 6-10 tax returns

_______ 11-15 tax returns

_______ More than 15 tax returns.

14. If the answer to 13 was "none," go on to 15. If the answer to 13 was anything other than "none," have you ever encountered an item in filing your own tax return in which you weren't certain of how the item should be treated (i.e., taxable or not taxable, deductible or not deductible)?

_______ No

_______ Yes

If yes, what was the approximate amount of the item?_______

If yes, was the item an income or an expense item? _______

INSTRUCTIONS: Each of the six statements below represents a thought that you may have had when deciding how much of Happy Car's cash flow to withdraw in each period. Circle the number on the scale provided that best represents how much you thought about this particular statement when making your withdrawal decisions. You may agree that all of the statements are true, but what I'm asking is which of these statements you thought about when making your decisions. There are no right answers; you may not have thought about every one of these statements.

15. If I take out large amounts in withdrawals, I'll increase the number of Withdrawal Tickets that I'll earn for certain.

Did Not Think About This in Making My Decision	Thought About This A Lot in Making My Decision

|---------|---------|---------|---------|---------|--------|

1 2 3 4 5 6 7

16. If I take out small amounts in withdrawals, I'll decrease the number of Withdrawal Tickets that I'll earn for certain.

Did Not Think About This in Making My Decision	Thought About This A Lot in Making My Decision

|---------|---------|---------|---------|---------|--------|

1 2 3 4 5 6 7

17. If I take out large amounts in withdrawals, I'll increase my chances of being a low value firm and losing some of my Withdrawal Tickets.

```
Did Not Think                                     Thought About
About This in                                     This A Lot in
Making My Decision                                Making My Decision
  |                                                     |
  |                                                     |
  |---------|---------|---------|---------|---------|--------|
  1         2         3         4         5         6        7
```

18. If I take out small amounts in withdrawals, I'll decrease my chances of being a low value firm and losing some of my Withdrawal Tickets.

```
Did Not Think                                     Thought About
About This in                                     This A Lot in
Making My Decision                                Making My Decision
  |                                                     |
  |                                                     |
  |---------|---------|---------|---------|---------|--------|
  1         2         3         4         5         6        7
```

19. If I take out small amounts in withdrawals, I'll increase my chances of being a high value firm and earning more Value Tickets.

```
Did Not Think                                     Thought About
About This in                                     This A Lot in
Making My Decision                                Making My Decision
  |                                                     |
  |                                                     |
  |---------|---------|---------|---------|---------|--------|
  1         2         3         4         5         6        7
```

20. If I take out large amounts in withdrawals, I'll decrease my chances of being a high value firm and earning more Value Tickets.

```
Did Not Think                                     Thought About
About This in                                     This A Lot in
Making My Decision                                Making My Decision
  |                                                     |
  |                                                     |
  |---------|---------|---------|---------|---------|--------|
  1         2         3         4         5         6        7
```

INSTRUCTIONS: Now rate the six statements below based on how descriptive each statement is of how you thought about the withdrawal decisions. On the line next to the statement, enter a "1" for the statement that is the most descriptive of how you thought about the decision, a "2" for the statement that is the next most descriptive of how you thought about the decision, and so on. Enter a "6" for the statement that is the least descriptive of how you thought about the decision.

_____ If I take out large amounts in withdrawals, I'll increase the number of Withdrawal Tickets that I'll earn for certain.

_____ If I take out small amounts in withdrawals, I'll decrease the number of Withdrawal Tickets that I'll earn for certain.

_____ If I take out large amounts in withdrawals, I'll increase my chances of being a low value firm and losing some of my Withdrawal Tickets.

_____ If I take out small amounts in withdrawals, I'll decrease my chances of being a low value firm and losing some of my Withdrawal Tickets.

_____ If I take out small amounts in withdrawals, I'll increase my chances of being a high value firm and earning more Value Tickets.

_____ If I take out large amounts in withdrawals, I'll decrease my chances of being a high value firm and earning more Value Tickets.

INSTRUCTIONS: If none of the statements above is very descriptive of how you thought about how much of Happy Car's cash flow to withdraw each period, please briefly describe how you thought about the decision in the space below.

____

____

____

____

____

INSTRUCTIONS: For each of the following statements, please circle the appropriate number on the scale provided that best represents your agreement with the statement. There are no right answers.

21. I chose the withdrawal amounts that I thought would increase my chances of earning as many tickets as possible.

Definitely Disagree | Neutral | Definitely Agree

|--------|--------|--------|--------|--------|--------|
1 2 3 4 5 6 7

22. In choosing my withdrawal amounts, I had a minimum amount in mind that I wanted to have in my business cash account at the end of the study.

Definitely Disagree | Neutral | Definitely Agree

|--------|--------|--------|--------|--------|--------|
1 2 3 4 5 6 7

23. In choosing my withdrawal amounts, I had a minimum amount in mind that I wanted to have for total withdrawals at the end of the study.

Definitely Disagree | Neutral | Definitely Agree

|--------|--------|--------|--------|--------|--------|
1 2 3 4 5 6 7

24. I understand how tickets are earned in this study.

Definitely Disagree | Neutral | Definitely Agree

|--------|--------|--------|--------|--------|--------|
1 2 3 4 5 6 7

25. I took the tasks I performed in this study seriously.

```
Definitely                                                  Definitely
Disagree                     Neutral                        Agree
     |                                                         |
     |                                                         |
     |--------|--------|--------|--------|--------|--------|
     1        2        3        4        5        6        7
```

26. The decisions that I had to make between withdrawing cash and leaving cash in Happy Car seemed realistic.

```
Definitely                                                  Definitely
Disagree                     Neutral                        Agree
     |                                                         |
     |                                                         |
     |--------|--------|--------|--------|--------|--------|
     1        2        3        4        5        6        7
```

INSTRUCTIONS: Please read the following statements. Circle "T" if you think that the statement is True. Circle "F" if you think that the statement is False.

27. T F I am more unsure about the exact number of Withdrawal Tickets that I will receive than I am about the number of Value Tickets that I will receive.

28. T F The withdrawals that I make do not affect the type of firm (i.e., high, medium high, medium low or low) that my firm will be determined to be at the end of the study.

29. T F If the tax rate in the study had been 15% rather than 33%, I probably would have earned more total tickets.

30. T F No matter how much I withdraw, it is always <u>more</u> likely that my firm will be a low value firm than a high value firm at the end of the study.

INSTRUCTIONS: Please answer the following questions by marking your choice with an "X."

31. Have you ever held a full-time job (other than a summer job)?

_______ Yes
_______ No

32. How old are you?

_______ 18-22
_______ 23-27
_______ 28-32
_______ Over 32

33. Which of the following accounting courses are you currently taking or have you taken in the past?

_______ Introduction to Financial Accounting (ACG 2001)
_______ Financial Accounting 1 (ACG 3132)
_______ Financial Accounting 2 (ACG 3142)
_______ Cost and Managerial Accounting 1 (ACG 3342)
_______ Cost and Managerial Accounting 2 (ACG 3352)
_______ Federal Income Tax Accounting 1 (TAX 4002)
_______ Accounting Information Systems (ACG 4451)
_______ Auditing 1 (ACG 4652)
_______ Advanced Financial Accounting (ACG 5025)
_______ Federal Income Tax Accounting 2 (TAX 5025)
_______ Federal Income Tax Research (TAX 5065)
_______ Advanced Accounting for the Control. Function (ACG 5385)
_______ Auditing 2 (ACG 5655)
_______ Corporate Tax (TAX 6105)
_______ Accounting Concepts and Fin. Reporting Stds. (ACG 6135)
_______ Partnership Tax (TAX 6205)
_______ Fin. Reporting and Auditing for Spec. Ind. (ACG 6296)
_______ Accounting Database Management Systems (ACG 6405)
_______ Management Information Systems (ACG 6495)
_______ International Taxation (TAX 6505)
_______ EDP Auditing (ACG 6625)
_______ Financial Accounting Issues and Cases (ACG 6696)
_______ Contemporary Tax Topics (TAX 6875)
_______ Others ______________________________

INSTRUCTIONS: Please answer the following questions. Your responses to these questions will not affect the number of tickets that you earn in this study.

34. How many Withdrawal Tickets do you expect to earn? __________

35. How many Value Tickets do you expect to earn? __________

APPENDIX B
RESPONSES TO DEBRIEFING QUESTIONS

In deciding whether or not to report the litigation settlement as income on my tax return, I thought about how the taxes on the settlement would affect the number of tickets I could earn.[1]

Overall mean	5.33
Subjects choosing conservative reporting (n=65)	4.57
Subjects choosing aggressive reporting (n=133)	5.71
	p-value=.0002
Subjects assigned to income treatment (n=101)	5.11
Subjects assigned to expense treatment (n=97)	5.57
	p-value=.09

The decision that I made about whether or not to report the litigation settlement as income (deduct the litigation settlement as an expense) on Happy Car's tax return is the same as the decision that I would make on my own tax return if I had received (paid) the settlement in real life.

Overall mean	5.20
Subjects choosing conservative reporting (n=65)	5.80
Subjects choosing aggressive reporting (n=133)	4.90
	p-value=.0004
Subjects assigned to income treatment (n=101)	5.03
Subjects assigned to expense treatment (n=97)	5.37
	p-value=.16

The tax reporting decisions that I made in this study seemed realistic.

Overall mean	5.30
Subjects assigned to income treatment (n=101)	5.26
Subjects assigned to expense treatment (n=97)	5.34
	p-value=.67

---

[1] Subjects responded to a 7-point Likert-type scale where the "1" endpoint corresponded to "Definitely Disagree" and the "7" endpoint corresponded to "Definitely Agree." The mid-point was labeled "Neutral."

When (or if) I file a tax return in real life, I would never want to run the risk of having the IRS increase my taxes in an audit. I would rather pay too much tax than take a chance of possibly having to pay more taxes in an audit.

Overall mean	3.54
Subjects choosing conservative reporting (n=65)	4.98
Subjects choosing aggressive reporting (n=133)	2.83
p-value=.0001	

Flo receives some cash and is honestly not sure whether it is taxable or not. Flo decides not to report the cash receipt as income on her tax return. Joe pays cash for an expense and is honestly not sure whether it is deductible or not. Joe decides to deduct the cash payment as an expense on his tax return.[2]

Overall mean	3.77
Subjects choosing conservative reporting (n=65)	3.85
Subjects choosing aggressive reporting (n=133)	3.74
p-value=.41	
Subjects assigned to income treatment (n=101)	3.82
Subjects assigned to expense treatment (n=97)	3.72
p-value=.43	

---

[2] Subjects responded to a 7-point Likert-type scale where the "1" endpoint was a statement that "Flo has committed a worse moral offense than Joe has" and the "7" endpoint was the statement "Joe has committed a worse moral offense than Flo has." The mid-point was labeled "Neutral."

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Cynthia Ann Copp was born in Oklahoma City, Oklahoma, in 1957. She received her B.S.B.A. majoring in accounting from Oklahoma State University in 1979. She received her M.S. in accounting from Oklahoma State University in 1980. She was employed with Deloitte Haskins & Sells in Tulsa, Oklahoma, for seven years prior to entering the Ph.D. program in accounting at the University of Florida in 1987. Copp completed the Ph.D. program in 1991 and accepted a faculty position at Louisiana State University.

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

John L Kramer

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Professor of Accounting

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

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